A SHORT CRITIQUE OF KANT'S UNREASON

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Abstract

A Short Critique of Kant's Unreason is a brief critical analysis of some of the salient epistemological and ontological ideas and theses in Immanuel Kant's famous Critique of Pure Reason.
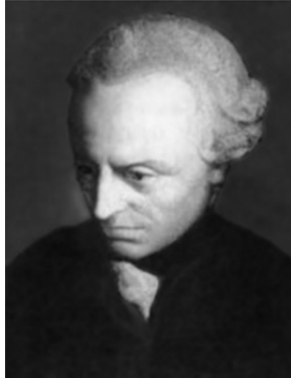
It shows that Kant was in no position to criticize reason, because he neither sufficiently understood its workings nor had the logical tools needed for the task.

Kant's transcendental reality, his analytic-synthetic dichotomy, his views on experience and concept formation, and on the forms of sensibility (space and time) and understanding (his twelve categories), are here all subjected to rigorous logical evaluation and found deeply flawed – and more coherent theories are proposed in their stead.

This essay is drawn from the author's earlier book ***Logical and Spiritual Reflections***.

Author's note

My writing the present essay focusing on some of Kant's illogical views should not of course be construed as a rejection of everything he says. I regard many of his contributions as very interesting and instructive. Moreover, I am well aware that a philosophical system as broad and complex as Kant's cannot be treated fairly in a few pages, particularly without claim to expertise in Kant's philosophy. All I hope to do here is roughly sketch some of his basic ideas, and give my logical comments in relation to them. Many of these comments are, I think, original, and that is why I feel some urgency in writing them down. Of course, it would be nice if one day I have the courage to take up the daunting task of writing a large and detailed book on Kant's thought, but in the meantime this brief exposé will have to do.

Immanuel Kant (Germany, 1724-1804).

Contents

1. KANT'S TRANSCENDENTAL REALITY

René Descartes and David Hume, and other enlightenment philosophers, both enriched and impoverished Western philosophy. They gave it increasing breadth and depth, but they also instituted many serious errors of thought, many of which have lingered and festered till today. Some of these errors were inevitable, being merely a surfacing of deep, ancient common problems; but many errors could have been avoided with a bit more effort.

The same can be said concerning Immanuel Kant[1]. Even as he earnestly tried to fix some of the damage caused to

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[1]   Kant's *Critique of Pure Reason* (1781; 2nd ed. 1787) can be read on the Net at http://philosophy.eserver.org/kant/critique-of-pure-reason.txt. For a brief exposition of it, see http://en.wikipedia.org/wiki/Critique_of_pure_reason (though keep in mind there are disagreements among commentators).

philosophy by his predecessors, he caused further and more profound unnecessary havoc. For instance, his theory of reality has greatly exacerbated (although he denied it) the Cartesian mind-body dichotomy. What in Descartes' philosophy was a not fully answered question becomes in Kant's an institution. We will here first give some consideration to this philosophical legacy, namely his famous dichotomy between:

- **Things as they appear**, or "**phenomena**", which constitute the **immanent** world of common experience, which (according to Kant) is illusion.

- **Things in themselves**, or "**noumena**", which (according to Kant) constitute a **transcendental** world to which we have no empirical access, which is reality.

According to Kant, these two sets of things (or objects) are necessarily different, and so constitute separate worlds. We can 'know' the world of appearance, insofar as we have access to it through our senses and ordinary reasoning relative to them. But this is of necessity not the real world, since it is tainted by consciousness. The world of reality is by definition unknowable, since the senses have no access to it, and if they did it would not be independently real anymore. Hence, we have no true knowledge and can have none.

Kant followed Hume in believing man's 'knowledge' to be necessarily limited and distorted, because (i.e. simply by the very fact that) it is mediated by the senses. We

only perceive what the senses present to us, but have no knowledge of the way things beyond the impressions they give us really are. Kant attempted to mitigate or overcome such negative conclusions by laying claim to some knowledge by other means, i.e. by radically non-empirical means.

According to him, our perception and understanding of the world is a result of filtering or molding of our sensory impressions through *a priori* intuitions (of space and time) and *a priori* concepts (such as causality). Such "pure forms of sensibility and of understanding" impose on us a certain basic view of the world, independently of (i.e. without regard to or appeal to) any content of sensation. They are structural preconditions of, respectively, any perception and any conceptual understanding, which therefore to a certain extent *determine* our thoughts without any reference to experience, which means effectively '*subjectively*' (in one sense of the term, i.e. at least not objectively).

Kant referred to this upside-down approach to human knowledge (which reverses the traditional empiricist assumption that all ideas must derive from experience) as his "Copernican revolution"[2]. But of course by

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[2]   To call it a revolution was apt. To call it Copernican, I am not so sure, for the benefits or disadvantages were not comparable. This desire to imitate Copernicus, and find some ingenious new formula that would 'turn things around', and surprise and impress everyone, is sheer vanity. Philosophers and logicians must learn to overcome it within themselves,

attempting such a solution to the difficulty Hume had presented him with, Kant only all the more confirmed the problem.

But, I submit, all the above is based on *arbitrary claims and misunderstandings*.

All such claims of his are premises rather than conclusions. If we ask by what validated methodology Kant has justified these beliefs of his, one is hard put to give a cogent answer. Since Kant has (like Hume) essentially given up on the intricacies of inductive logic, or perhaps never known or understood them, the arguments he puts forward can only constitute window-dressing around what is simply an intuitive-declarative mode of philosophizing[3]. Such an authoritarian approach (he *tells* us what the truth is, from a privileged standpoint) is bound to lead to errors and inconsistencies.

Perhaps the best way to respond to such ideas is not to focus so much on their tangled and dubious genesis from doubtful premises, but rather to concentrate on identifying and evaluating the finished product. It would be foolish to reject all of Kant's thought wholesale because of its imperfections, for it also contains a great many interesting new insights and perspectives, which do

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and be content with development or evolution instead of revolution. Kant, for all his breadth and genius, had a mind insufficiently disciplined by logic and too easily carried away by vague fantasies.

[3]   Using the word 'intuitive' here in its more pejorative sense.

enrich philosophy. However, his thought is also rich in holes and contradictions; and these certainly can and should be highlighted.

Domains. It should be noted that although Kant, siding with Hume, officially denied our having any faculty of transcendental knowledge, the idea of transcendental reality remained central to his philosophy.

That is, although he did not officially advocate a human faculty with access to the noumenal domain, the simple fact that it was being at all considered and discussed (as something that may conceivably exist) gave it a sort of legitimacy. In this way Kant could eat his transcendental cake (*de jure*) and have it too (*de facto*). Of course, to conceive of something does not strictly imply that it exists. But to place that idea of possible existence at the center of one's discourse does signify an effective belief in and approbation of it. The idea is used indirectly and in a concealed manner, and gradually seeps in[4].

Moreover, because Kant considers the world of appearances as co-extensive with the world commonly believed in and studied by natural science (i.e. the material world), he needs a transcendental world to justify and explain less materialistic beliefs like God,

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[4]   For instance, when Kant speaks of a "transcendental deduction" he is in fact claiming "transcendental knowledge" of sorts for himself. He may dress it up as "deduction", but it is the "transcendental" part that counts. Read his lips.

souls, mind, consciousness, freewill, ethics, aesthetics, and the like (i.e. spirituality). For, while paying lip service to Hume's apparently scientific limitations on knowledge, Kant's philosophical aim and ambition is to get beyond these limitations and reinvigorate the concerns of philosophy that they have seemingly invalidated[5]. Thus, ultimately, though he is careful not to declare it too explicitly, Kant implicitly upholds a transcendental (i.e. otherworldly) reality.

Nevertheless, Kant's philosophy is clearly, overall, a form of skepticism. For, although he (unlike more radical skeptics) does not deny outright, but rather tacitly (and sometimes somewhat explicitly, too) assumes, there are things in themselves behind things as they appear, he still does deny our ability to access them through our faculties of empirical knowledge (notably our sense organs and brains), and thus effectively condemns us forever to the limited and virtual world of appearances.

It follows, paradoxically, that what we are to call reality thenceforth (i.e. *transcendental* reality) is of necessity

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[5]   It is interesting to note the (not fortuitous) similarity between Kant and Wittgenstein in this respect. The latter invalidates ordinary language, and considers that the things that really count and are interesting to philosophy are therefore unattainable; but at the same time he holds onto a wistful interest in those faraway things. Of course, this was all pretentious posturing, since Wittgenstein communicates all of it to us through ordinary language (how else could he present his thesis to us?), which means that his actions are inconsistent with his thoughts, which means that the latter must be regarded as false (since the former are inevitable).

something imaginary for us, since we have no empirical or extraordinary way to know it; and the world of appearances that we do know must be called illusory (since it is in principle *other than* such reality). Of course, this whole scenario is being claimed true, i.e. as reality, so we are fed a deep contradiction here.

It should be noted that this infelicitous quandary is a consequence of Hume's rejection of inductive logic. If induction is doubted, hypothetical thought is an unacceptable form of human cognitive behavior, for in a purely deductive logic (if such a thing were at all conceivable), a thesis must either be true or false – no degrees of truth are admitted. A mere hypothesis, a thesis that has no special evidence going for it other than the meaning of its terms (if that), is in that context necessarily wrong.[6]

If mere hypothesizing is illegitimate, all the more so is *speculation* (be it metaphysical or otherwise). For a speculative thesis is not only hypothetical, but moreover

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[6]   People who think thus forget that science is not certainty, but discipline in the midst of uncertainty (see Feynman pp. 15-28). Science progresses by imagination – which is of necessity at first, and in a sense forever, somewhat hypothetical. A thesis is hypothetical even if it is 'only just conceivable'; i.e. even if its credibility is at the lower limit of truth, provided it has not been refuted by experience or logic. Such a thesis still has some epistemological status and value, even if it is not comparable in certainty to theses with more evidence to support them. At the other extreme of this range of truths, we have self-evident truths, i.e. pure empirical data or contradictions of self-contradictory statements.

we can think of no way that it might eventually be empirically reinforced or rejected. That is to say, it is not only not-yet verified or falsified, it is in principle neither verifiable nor falsifiable. In that context, the possibility that we might someday think of a way to test our speculation is not admitted as an argument, since only certainties one way or the other are given credence.

It must be stressed that the stated dichotomy between things-in-themselves and things-as-they-appear, however arrived at by Kant, is understood by him as implying *two antithetical domains*. They are presented as essentially without relation to each other, or at least without demonstrable relation; therefore, discrepancy between them is inevitable (epistemologically if not ontologically). Since they are unrelated or of unknown relation, they are necessarily in part or in whole contradictory.

To refute Kant, we must first ask *how he himself knows enough* about this transcendental domain to know it is unrelated to, different from and contradictory to the domain of ordinary knowledge? If he denies humans any means to knowledge of such 'true reality', then he is contradicting himself in the very act of discussing the issue, since to do so even hypothetically is to claim a means to knowledge of it of sorts.

It is worth noting that Kant also, in some contexts, regards the phenomenal domain to be somehow and somewhat *caused by* the noumenal domain. But he would

be hard put to explain how he got to know of such causation, given his belief system (about empirical knowledge and about knowledge of causation). By such illogical thinking, Kant imputes us with inextricable ignorance (which he of course is seemingly somehow exempt from, to some degree at least).

Evidently, Kant is functioning simultaneously on two planes. Like any ordinary man in practice, he considers himself in contact with external reality and able to know to some extent whether his ideas correspond or not to it, are caused by it or not. On the other hand, as a philosopher influenced by Hume's argument that we only know our impressions and not the external facts that we believe caused them, he is intellectually forced to reject all such commonsense belief. His whole system of philosophy is an attempt to satisfy both of these tendencies in him; but he was not sufficiently logical a person to find a consistent solution.

How then, we may well ask, do we in fact ordinarily come to the distinction between reality and appearance? What answer can we propose instead of Kant's? We need to explain how these concepts are understandable to both Kant and ourselves, for his ability to talk about these things and our ability to understand him must be taken into account and satisfactorily explained.

The truth is, we arrive at these concepts *in relation to each other*. Reality is to us a characterization *of* most appearances, *except* those few we class as illusory

because of intractable empirical or logical problems they give rise to. Thus, appearance is the *common character* of reality and illusion, rather than equal to illusion and opposed to reality. Conversely, appearance is an aspect of a larger reality, namely the fact that the latter is (at least in part) knowable through consciousness.

Hence, the two concepts are in fact related – each giving rise to the other, whether by an epistemological or by an ontological route. Things in themselves are known by an accumulation of appearances; we gradually perceive *aspects, parts or features of* the things themselves, and (by means of comparisons and contrasts and other logical acts) form credible concepts of them. The concept of "things in themselves" does not spontaneously arise in our heads out of nowhere, as some sort of hearsay report of a world beyond our own; it first arises as a characterization of most elements of our world.

Therefore, in actual practice, reality emerges as but *a subcategory of* appearance, and not as a phenomenological category *opposed to* that of appearance. The two concepts are harmonious, not dissonant. Reality is sometimes legitimately opposed to illusion (illusory appearances), but never to appearance as such (*qua* appearance), note well. All appearances, whether real or illusory, are parts (however unequal in status) of the same one world. And any *non-apparent realities* there might eventually be (as we may by

extrapolation suppose or speculate) are logically also part of that same one world.

This is the way those basic concepts can be logically reconciled. Kant failed to see it.

The notion of a mysterious "other reality" behind (or above or beneath or beyond) ordinary reality is a later construct, of shamans, religious mystics and philosophers. There may be some eventual truth in it, but it cannot displace the basic concept of real appearance as against illusory appearance. We may eventually establish a concept of "true reality" or "ultimate reality" as against ordinary reality, through some convincing mystical insight or at the end of a long inductive process, but this would extend or deepen rather than nullify ordinarily apparent reality.

If we label this presumed, ordinarily hidden domain as Kant did 'the noumenal domain', one thing is sure about it – it does not consist of 'another set of phenomena', existing somehow apart from the multiplicity of phenomena of ordinary experience. The 'noumenon' can thus safely be assumed to be *unitary and non-phenomenal*. We can on the basis of this insight perhaps equate it to the underlying One of philosophical Monism, or the 'original ground of being' or 'original mind' of Buddhism, or again to the God of Monotheism.

Our faculties. To claim things are constitutionally not as they seem, is to claim that our faculties of cognition (whatever these be[7]) make things seem other than they really are. By opposing reality and appearance to each other, Kant effectively asserts that *the very fact that we have faculties* of perception and understanding invalidates them. He takes it for granted that such faculties of knowledge *necessarily* distort – just because they are faculties, i.e. structures of some sort through which knowledge has to be acquired.

Of course, Kant does not assault our faculties so frontally. He in fact claims to defend them, to widen their powers. But by assigning *them* the power to make sense of sensory impressions, he severely limits *our* powers of cognition and thus creates an *unbridgeable gap* between us and the world around us. It logically follows from his doctrine that our faculties are incapable of putting us in contact with true reality, and can only deliver to us a semblance of reality.

But that implied claim of his is quite unproven, deductively or inductively. It is based on Hume's analysis of the issue; but if we examine that, we find it

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[7]   One's faculties of cognition are the physiological and psychological apparatuses which make possible one's consciousness of things other than oneself, and also perhaps of oneself. We need not be able to define them much more precisely than that to discuss them, though of course we can say that they include (at least, most obviously) the sense organs and the brain.

contains many factual errors and errors of reasoning. Moreover, by claiming to know what our faculties are or are not capable of, Kant is – within the framework of his own system of philosophy – engaged in transcendental knowledge. For if we can only know the cognitive *products of* our faculties, then not only external reality is unknowable *but also our faculties* are unknowable. Under his régime, to know our intermediary faculties would in principle be as impossible as to know what lies beyond them[8].

Kant's fundamental doubt and the massive philosophical system he built around it are, in the last analysis, just arbitrary assertions arising out of utter personal confusion. However intelligent and well meaning he may have been, that is the bottom line. The whole thing seems credible to some people only because they have simply not sufficiently reflected on the implications involved – i.e. because they are still as confused as he was.

To give a physical analogy to Kant's view of our faculties – it would be like saying that the very fact that water is sent through a pipe is proof that what comes out at the other end is not water, or is dirty water. Or again, it would be like saying that information processed by a computer is necessarily mixed up by it (i.e. sometimes you feed it a 1 and it spontaneously returns a 0, or vice

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[8]   Note well this reflexive thought, which many commentators on Kant have missed.

versa). Some physical systems do significantly affect the things they process, but it does not follow that all do so.

Similarly for our sensory mechanisms and our brain. It is quite conceivable that our faculties convey information without twisting it out of shape. A filter does not necessarily function incorrectly. To claim it to always function incorrectly, one would have to demonstrate the fact specifically. We cannot just say-so, or generalize from some dysfunctions to others not like them. We cannot just assume that whatever stands in between us and the world necessarily blocks or distorts the view; some screens are effectively transparent.

Furthermore, we cannot assume that our faculties distort *without being guilty of self-contradiction*, for we are presumably using these very faculties to assert it. *Therefore*, some non-distortion must logically be admitted. This argument is a *coup de grace* against any idea of constitutional dysfunction of human knowledge faculties. If Kant counter-claims that his own assertion is the one exception to the rule, he is logically required to provide some convincing proof, which specifically for some credible reason exempts the faculties *he* uses in making the assertion. The onus of proof is on him, if he wishes to exempt himself from his skepticism towards our faculties.

Moreover, contrary to Kant's suggestion, we do not filter, mold, format or otherwise affect our experience of the world through "forms" like space and time or like

causality. We rather *mentally project "overlays"* (i.e. transparent templates) on the field of appearance, mentally splitting it into parts and into distinct entities, of different sizes and various distances apart, assuming the outlines and depth of things, comparing and contrasting their measurements, mentally noting the sequences of events, their presences and absences, their frequencies.

It is on the basis of such primary observations and ratiocinations, that we proceed with conceptualization and draw many conclusions about the world. Though affected by the object, none of this affects the object.

For example, when we subsume all humans in the class of 'humans', we are in no way making any actual change in the objects we have called humans, but only affect (or express) our perception (or rather, conception) of these objects, implying the objects have a certain commonality and distinctiveness which justifies classing them under one head. Such classification counts as *a mere inductive hypothesis*, anyway, for it is not excluded that someday a different classification may seem more appropriate to us. The history of biology, for instance, is replete with such changes in classification.

More deeply, the senses do not *mediate* between us and the world seemingly beyond them (and thus screen the world from our view). We first experience the external world itself *directly*. The senses play some role in triggering that experience and in memorizing it, but they do not hinder or obscure it. *This is the only self-*

consistent hypothesis with regard to perception of externals. To assert the opposite hypothesis (viz. that we do not perceive matter, but only mere images or other mental effects of matter) is self-contradictory; therefore the truth of our hypothesis is self-evident, logically incontrovertible.

It is important for philosophy to mature at last, and accept to be disciplined by inductive as well as deductive logic[9]. Philosophers must understand and accept and internalize the fact that *any* theory that yields a contradiction must be abandoned and replaced by an alternative theory, or at least modified till it becomes consistent. If we evaluate Kant's theory of knowledge with this indubitable and inescapable principle in mind, we are logically forced to reject it. Every philosophy is *an inductive hypothesis*, which must win and keep our respect in the same way as proposed theses do in other fields.

If we persist like Kant in following Hume's *hypothesis* that we do not experience the world itself, but some impressions or ideas that may or may not reflect the world, we will never give ourselves the chance to investigate *the alternative hypothesis* that we do experience the world itself. Hume's skeptical hypothesis is not consistent. The alternative hypothesis is admittedly

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[9]   That would be a true "Copernican revolution" – or rather, evolution! To free philosophy from repeating the same mistakes again and again. To look beyond our mind-sets.

difficult to flesh out, but at least it is consistent. If we remain eternally paralyzed by Hume's perspective on things, we will never make an effort to imagine and test ways and means to flesh out the direct perception theory.

Our cognitive operations are in principle transparent; they do not in any way directly affect the objects that we observe or modify their appearance to us. At least, they do not *if we are careful* not to get carried away by our ideas without due attention to detail and to logic. If we observe and reason vaguely and loosely (or worse still, perversely), we of course may well expect distortions to occur. That constitutes misuse, improper use, of our faculties.

Humans are, to be sure, *fallible*. For a start, we are largely ignorant, simply due to the sheer immensity of the world around us. Moreover, we often falsely perceive (or more precisely, conceive) things, as we later discover. Many of our ideas and theories have turned out to be in error, though we adhered to them for very long. And of course, under the influence of such false beliefs, we are every day being misled in our perceptions and conceptions, in the sense that we may (a) fail to perceive certain things that are present because we do not expect them there, or (b) perceive things that are absent or perceive things incorrectly, by confusing our imaginations or expectations with observations; or (c) we may misinterpret what we perceive or do not perceive.

But the negative effects our acquired beliefs may have on our subsequent perceptions and conceptions should not be considered as blinding or distortion due to our cognitive faculties. It is true that we are not infallible; but that does not imply we are *wholly* fallible. The problems in such cases are simply insufficient information and, more shamefully, imperfect logical practice, such as ignoring details, drawing hasty conclusions, and so forth. The proof that the faculties are not to be blamed is that *it is through those very same faculties that we occasionally uncover and correct the errors concerned*.

Our conceptions and more largely our theories may of course also affect things *indirectly, ex post facto, by influencing our actions* relative to the objects concerned. For example, if some people classify members of another race as sub-human, this thought will cause them to engage in racist acts, harming and maybe killing those they hate. But such destruction of the object by acts based on wrong thoughts is not to be confused with cognitive distortion such as Kant suggests. It occurs, to repeat, after the fact.

Induction. The attack on our faculties by Hume, Kant and many other philosophers, is fundamentally due to a failure to take into account and understand inductive reasoning. Contrary to Hume's belief, as I have shown elsewhere, there is no "problem of induction". Hume just made major errors of induction and deduction when he

put forward this problem and other related problems. As for Kant, he just took Hume's view for granted, without any truly critical review.

The principle of induction validates human knowledge, simply by demanding from those who deny knowledge that they do more than just assert their skeptical claim – i.e. that they provide a relevant, consistent and sufficiently empirical hypothesis in support of their theoretical posture. If they cannot do so, then we can reasonably continue to rely on our senses and on our reason. If we examine their doubts closely, we find them to be hypotheses (or even speculations), which tightly or loosely refer to some real or imagined difficulties in traditional assumptions, but which are themselves not devoid of equal or worse weaknesses.

The principle of induction is that *what appears may be taken as reality until and unless we have some experience or reason that suggests we are engaged in an illusion*.

Appearance is reality, except when otherwise proved. Blanket skepticism is logically impossible; skeptics must prove their case specifically. This principle underlies Aristotle's laws of thought, and ties them together in a single and very powerful methodological formula.

We cannot sustain the contrary hypothesis that the very fact of appearance is proof of illusion – for such a claim would be self-denying. If all appearance is illusory, then the illusoriness of appearance is illusory. It follows that

at least some appearance is real – *has to be admitted as real*. To claim something, any thing, illusory, it is necessary to present *specific* evidence or argument to that effect. Illusion cannot but be exceptional; it cannot be taken as the rule. For illusion is by definition the denial of reality; therefore, to assert an illusion some reality must first be acknowledged. There is no way out of this logic, though sophists continue to ignore it.

By 'appearance' we refer to the common character of both 'realities' and 'illusions' – i.e. it is what these two contradictory characterizations of any 'thing' have in common. All three terms imply, when we use them, both being in existence and being a content of consciousness. Thus, an appearance is something, whether real or illusory, *of which we are aware*. It *exists* at least to that extent, i.e. as an object of consciousness, though not necessarily beyond consciousness. If it exists *only* in consciousness, it is illusory; if it exists *both* in consciousness and outside it, it is real.

Note well that the concept of appearance is neutral with regard to the issue as to whether the current content of consciousness is 'objective' or 'subjective'. Appearance is a level of consideration occurring before this issue is or needs to be resolved. Thus, appearance is 'neither objective nor subjective' – or more precisely and less paradoxically put, it leaves that issue open for the time being.

We consider that many things also exist unbeknownst to us; i.e. we believe in things that are *real though not apparent*. We do so on the basis that things in our experience do not all appear together, but some appear at one time, others at another time; also, some things disappear, and then maybe reappear. Moreover, different apparent people have different experiences. Thus, by extrapolation, in the way of a convincing inductive hypothesis that aims *to integrate all such data*, we acknowledge a reality beyond appearance.

However, this assumption can only be consistently discussed with great caution. We cannot claim to know something outside consciousness, since the moment we make such claim we are including it within consciousness. We can, however, claim to know *of* something conceptually and indirectly, without implying we have full consciousness of it, in the sense that direct experience confers. We can consistently claim hypothetical knowledge, without implying categorical finality. That is, in an inductive framework, there are *degrees* between knowledge and ignorance.

Now, the point I wish to make here is that in criticizing Kant's idea of a "transcendental" or "noumenal" reality, I am not like many philosophers before me denying him or us the right to metaphysical speculation (or even some sort of direct transcendental consciousness). It is not the conception (or even perception or apperception) of a reality beyond the one we ordinarily experience that I am

contesting. In that case, what is wrong with Kant's view? Simply this: that he pits the presumed transcendental domain *against* the ordinary domain, both epistemologically and ontologically.

He maintains that such reality technically cannot *at all* be known, yet he implies he knows it enough to affirm it somewhat. He considers it is radically different from and indeed opposed to appearance, yet he considers that our sensory faculties have access only to appearance. It is such internal contradictions, which give Kant's theory its characteristic flavor of paradox (and therefore 'depth' in some silly people's estimate), that need to be emphasized and challenged.

It would be logically quite acceptable to state that no matter how much we know, we will never be omniscient; i.e. that there is always more to know. It would even be quite acceptable to say that there are things out there of which we will never know, that we cannot 'know' except very speculatively. This is all consistent, if it is formulated in the way of inductive probability, i.e. as hypothetical projection from the given to the not-yet-known or the largely unknowable. But it cannot be proposed like Kant did as a categorical truth, known by totally "deductive" means.

To give a concrete example: we can imagine that our universe, the material universe of physicists and

astronomers[10], is a mere speck of dust in a much larger material universe full of zillions more such specks of dust. Science might come to such a conclusion for some reason (some such idea is already somewhat suggested in the String theory, with its many new dimensions). Or we might conceive this as a forever-speculative possibility, arguing that our telescopes and other instruments of observation of necessity cannot take us beyond the 13.7 billion year old universe apparent to us.

Such eventual claims are very different from Kant's claim of a transcendental reality. Not because of any mystical suggestions his theory might have – for we could formulate consistent speculations to that effect too. But simply because the larger universe they propose is presented as *a further extension* of the apparent smaller universe, and not as its antithesis. In such non-Kantian perspective, experience remains the ultimate basis of all knowledge, however inductively remote and speculative it becomes. Even if such speculation is largely ultimately unverifiable and unfalsifiable, it is at least kept as consistent as possible with all experience.

In the Kantian perspective, on the other hand, experience is depreciated and ultimately nullified. First, experience is effectively discarded wholesale as incapable *by itself*

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[10]   Though current science estimates the universe as 13.7 billion light years wide, it does not categorically exclude something beyond; as Feynman puts it: "but it just goes on, with its edge as unknown as the bottom of the bottomless sea" (p. 10).

of informing us regarding any aspect of reality whatever; we must rely on non-empirical "forms of sensibility and understanding" to get any knowledge out of it *at all*. That is, in ordinary knowledge, experience is as good as nonexistent, before reason comes into play and creatively gives it shape. Secondly, as regards knowledge of *ultimate* reality, experience (and indeed, reason) is something devoid of any epistemological value or ontological significance whatsoever. That is, experience (and indeed, reason) is misleading *in principle*, i.e. necessarily wrong.

It is this radical transcendental "idealism" (i.e. anti-realism) that distinguishes Kant's philosophy, and makes it logically untenable. Many observers and commentators fail to spot this fundamental antinomy in Kant, because Kant's discourse is very intricate and broad ranging, and it is full of outwardly reasonable looking *approximations* of the human condition. Many other thinkers, of course, do realize the confusions Kant's philosophy has sown.

2.   THE ANALYTIC-SYNTHETIC DICHOTOMY

Kant's dichotomy between the world apparent to us and some unknowable more really real world beyond is based on and buttressed by his **peculiar theory of logic**. I refer especially to his analytic-synthetic dichotomy.

According to his view, a proposition like "all bachelors are unmarried men" is analytic, meaning that it can be known to be true merely by examining the terms or concepts involved[11]. Thus, "analytic" refers to purely rational knowledge, which does not need to appeal to experience. This implies that all analytic propositions are "a priori". Moreover, all of them are (logically)

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[11]   Kant would also regard the negative sentence "bachelors are not married men" as analytic, since it is deducible (by obversion) from "bachelors are unmarried men".

"necessary", since their truth is not open to debate. To deny them would be to commit an antinomy[12].

Thus, a proposition like "all bachelors are unmarried men" is at once **analytic, a priori and necessary** (and thus universal, certain and fixed). By way of contrast, a proposition like "all bachelors are happy" is **synthetic, a posteriori and contingent** (and thus particular, uncertain and variable)– because we cannot determine just by rational means alone whether it is true or false, but must look into the matter empirically without any certainty of success[13].

(The above used examples, on the subject of bachelors, are those most commonly used nowadays by commentators. Kant's actual favorite examples were "all

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[12]   This sounds impressive; but upon reflection we realize analytic statements are mere tautologies, they just repeat the same thing in other words. So they do not contain much information, if any (at least this is the conclusion commentators often draw, but see further on). For this reason, the analytic-synthetic dichotomy bears some analogy to the transcendental-immanent dichotomy. Kant's analytic statements seem to exist in some ideal plane divorced from synthetic ones, just as transcendental reality is set apart from everyday immanent appearances.

[13]   Kant speculated about the possibility of propositions that would be both *synthetic and necessary.* Hume had previously denied such possibility, e.g. in his rejection of necessary connection in causal relations. In my view, this simply refers to what is properly termed 'natural law' or *natural necessity* (as against logical necessity). As I show in my work *Future Logic*, such propositions can indeed be validated by induction; natural necessity is knowable by generalization from actuality.

bodies are extended" and "all bodies are heavy", respectively. These are for the moment ignored here, because they involve complications irrelevant to the issues at hand. They will be given some consideration further on.)

Now, this logic theory of Kant's is simply balderdash. It is a very superficial and illogical construction. As we shall show, analytic propositions are misnamed; they have nothing to do with analysis – and they are neither purely a priori nor logically necessary.

Meaning. When we say that a bachelor is an unmarried man, we are not analyzing some pre-ordained truth, nor are we engaged in a wholly arbitrary declaration (as later commentators have countered). In this precise instance, we are voluntarily introducing, for the purpose of economy, a new word "bachelor" to use in place of the phrase "unmarried man" used until now. This is on the surface an equation of words, a "definition" of the word bachelor by the words unmarried man, a mere tautology.

But at a deeper level, what are we doing? We are deliberately *transferring the meaning of the words* "unmarried man" to the newly coined word "bachelor". This implicit 'meaning' is not yet-another verbal definition, but ultimately refers us to something outside the cycle of words – in experience (and abstractions from it). The meaning of a word is what we *intend* by the word, i.e. what experience (and more broadly

abstraction) the word has been invented by us to stand for in our verbal thoughts. The intention of a word is what it is designed by us *to point our attention to*.

The word serves as a mnemonic or reminder of something that is ultimately wordless. Thus, when we say: "bachelors are unmarried men", we are not merely juggling with meaningless symbols. The words "unmarried men" must first jointly mean something to us – they must refer us to some meaning *beyond words*. The definition of "bachelors" as "unmarried men" is then simply a conveying, a passing over of meaning, i.e. a redirection of intention. The defining phrase draws our attention to certain objects or contents of consciousness; and then, the defined word is attributed to the exact same objects or contents of consciousness.

When we look up a word we do not know in a dictionary, we are not merely looking for words to equate to it. We are hoping the dictionary definition will point our attention (approximately, if not precisely) in the direction of the meaning of the word. The words in the definition are means to that end; they are not the end itself. They are mere conduits.

The process involved here is very similar to what occurs in translation from one language to another. For instance, the proposition "un célibataire ≡ a bachelor" signifies equivalence between the word in French and that in English. Such equation is not merely verbal, but semantic; i.e. not only are the words equated, but their

meanings. Given the meanings, such equation is therefore a statement of objective fact. One cannot equate just any word in one language to just any in the other, and often such equations must be carefully qualified because identical words are unavailable.

It follows that even though our choice of the word "bachelor" as a substitute for "unmarried man" is conventional, and more or less arbitrary, though we often prefer to refer to etymology in coining new words[14], the proposition still ultimately relies on experienced data for its meaningfulness. In our example, the meaning depends on our existing in a society where men and women can engage in a contractual agreement called marriage, with certain rights and obligations on each side. An unmarried man is then a man who has not entered into such an agreement. And a "bachelor" is then declared short for "unmarried man".

The meaning of the word bachelor, then, is certainly *not the words* unmarried man, as some logicians mistakenly think. Rather, the meaning of both the word bachelor and the phrase unmarried man is *the apparent fact(s)* that these words all point us to. They are interchangeable because we have voluntarily assigned them a common (wholly real or somewhat imagined) factual meaning. We do not always need words to understand meaning;

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[14]   Note well: what is conventional here is simply what linguistic *sounds* (and their corresponding written letters) we select for the job at hand. It is a very superficial freedom of choice.

but words do facilitate more complex thought processes and communication, so such transfers of meaning are usually useful. Although they increase the number of words in our language, the use of shorter verbal formulae permits us longer thoughts.

Clearly, all this implies specific empirical content, and usually also some abstract content (which is derived from other experiences, but has received some rational processing). It is not something as divorced from experience as Kant makes it seem. If I tell you "all shworgers are lkitzerlo abcumskil" – you would say "whaaaaaat?" This would be an example of a definition independent of experience, i.e. devoid of any meaning (other than the meanings of the sentence structure and the words "all" and "are", which I have deliberately kept to make my point[15]) "All bachelors are unmarried men" is obviously not such a fanciful definition.

> A small digression on *polysemy*, i.e. multiplicity of meaning, is in order here.
>
> Two (or more) different words are said to be **synonyms** if they have the same meaning. The

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[15]   If I had said: "shbam lkitzerlo abcumskil shworgers lik" you would have been even more confused. Logicians who lay claim to artificial languages, or purely symbolic constructs, are stupid or dishonest, because they forget or conceal the fact they need existing language (plain English, or whatever) to communicate what they mean by them, with themselves and with the rest of us. To ignore this "little detail" is intellectually criminal.

words differ in sound and/or spelling, yet they mean the same thing. However, we must distinguish between *exact* synonyms and *approximate* synonyms, for though synonymy theoretically refers to identical meanings, in practice it is applicable to words with similar meanings. For it is clear that different words do not have either the same or different meanings – but may variously *overlap* in meaning, i.e. their intentions may converge *to various degrees*. Some pairs may be exactly synonymous; but often, they are only more or less synonymous. Similarly, by the way, *antonyms* (words with opposite meanings) may have strictly incompatible meanings, or (within reasonable limits) more or less conflicting meanings.

Inversely, a single word – that is, one in sound and/or in spelling – may have two (or more) meanings. Note that the words may sound the same and be spelt differently, or they may sound different and be spelt the same, or they may both sound and look identical. In any such case, though the word concerned is materially one, it is effectively equivalent to two words, since it has more than one meaning or intention. These two words – two in meaning though not in verbal appearance – are said to be **homonyms**. Their superficial similarity is not to be taken at face value, whether it has arisen accidentally or

incidentally or deliberately. Note however that the word may have *more or less divergent* meanings – i.e. its various interpretations may be semantically very close or very far.

Thus, both synonymy and homonymy may be said to exhibit polysemy. Sometimes, this multiple meaning is concealed in a synonymy; sometimes, in a homonymy. But in any case, some confusion may result. For this reason, it is always wise to keep in mind the difference between the external appearance of words (words as material sounds or sights) and their internal sense (their intended significance, what they is actually meant during their present use). Sounds or sights that have no meaning at all cannot properly be called words – if they symbolize nothing, they are not symbols; inversely, if they symbolize something, it does not follow that they symbolize nothing else. Language is not always cut and dried.

A few words are worth adding concerning the terms *ambiguity* and *equivocation*. These two terms can be considered equivalent – or contrasted. The term 'ambiguous' is reasonably unambiguous – it signifies an uncertainty of some sort, a difficulty in deciding on the correct interpretation to make or conclusion to draw. So it suggests a homonymy. The etymology of

ambiguity, 'both actions' confirms this: [one word with] two intents. The word 'equivocation' is more ambiguous. It is often in practice used as a synonym of ambiguity. This equation is suggested by the etymology of equivocation, which is 'same speech' – i.e. same word [though different meaning]. But the terms can also be distinguished, if we understand the equivocation as signifying: same [meaning, but different] speech. In this sense, equivocation is equivalent to synonymy.

It should be also be said that ambiguity and equivocation often occur on purpose, in the way of a deliberate lie, an attempt to fudge words or meanings so as to mislead oneself or someone else. But of course, they need not have such implications – they often occur in our discourse as mere expressions of inattention, ignorance or stupidity. In any case, it is clear that such confusions of words and meanings can cause havoc in reasoning. For instance, a syllogism whose middle term is ambiguous can lead to a false conclusion. Or likewise, if the minor or major term has a different sense in the conclusion than it has in the premises, we have an illicit inference. This is commonly called the fallacy of equivocation.

It should be added in passing, without here getting into a full theory of definition, that the example of "bachelors" (commonly used in the present context) represents only one type of defining act. In this case, we start off with a defining description, viz. "unmarried men", and then simply assign a name to the thing concerned (I call this deductive definition). However, in many if not most cases, we proceed in the opposite direction, *more inductively*.

We start with a vague notion that there is something there that we ought to name and study. We give the vague thing a name. This name is effectively all that "defines" it for us for now; it serves as a handle on the phenomenon, or as the memory box we will collect and store information about it in. Then we study the matter, empirically and rationally, describing it in various ways.

Gradually, we select one aspect of the phenomenon under study as its definition. This may be a categorical or conditional predicate, or conjunction of predicates, of any sort. For examples: (all and only) X are Y, or Xs do Y under conditions Z. We may later decide that choice was inappropriate for some reason (for example, the proposed definition may turn out not to be universal or unconditional, or not exclusive), and choose another part of the thing's description as its definition.[16]

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[16]   For example, we had a word for "men" (i.e. human beings) long before we were able to define them. Aristotle proposed "rational animals" late in human history, and modern

If we examine this process more closely, we find it to function essentially *by analogy*. The importance of analogy in human knowledge cannot be overstated and yet is rarely mentioned. When we classify two or more things under a common concept or name, or otherwise relate them theoretically, we imply them to be analogous in some respect(s). New ideas and theories are formulated by successive analogies; they cannot be invented *ex nihilo*, without remodeling some preexisting experiential (and usually partly rational) material. In the case of inductive definition, a vague resemblance between certain phenomena serves as the motive force of our research.

With this alternative act of "definition" in mind, we can see the inadequacy of Kant's theory[17]. He just focused on just one process of definition, which superficially seemed "analytical", and ignored the more significant process

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biology has proposed its own definition(s) long after. People were till then, and also today, still quite able to use and understand the word "mankind", on the basis of perceived similarities despite perceived differences, even though they did not have a verbal definition for it, or even think to define it.

[17]   And of certain related theories by some of his successors, notably the "logical positivists" in the 20th century. It is interesting to note the reflection of a prominent scientist in this regard: "extreme precision of definition is often not worthwhile, and… mostly it is not possible " (Feynman, p. 20). The reason it is "often not worthwhile" is because fixed definition would freeze our knowledge in a premature position: knowledge must be given the space and time to develop.

just described, which is clearly inductive, i.e. manifestly "synthetic"[18].

Truth. It follows from such analysis – and here I use the term "analysis" in a more reputable sense – that the proposition "all bachelors are unmarried men" is in fact, beneath the surface, as synthetic, a posteriori and contingent as the proposition "all bachelors are happy". To claim "all bachelors are unmarried men" *is true*, we must believe that *there exists* something we previously called unmarried men. Even though the word bachelor is arbitrarily equated to the previous words, the underlying meaning is still called for to give it meaning in turn. If (and only if) the intended object seems to exist, is it reasonable to call such a proposition true.

At this stage, we have to ask: what of imaginary terms? For instance, in what sense is "unicorns are horses with a horn on their forehead" empirically based? Here, relation between the defined term and the defining term is the

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[18]   It should be pointed out that when we have a vague, not yet defined word of this sort, it cannot be said that we are referring to its objects instead. This is said to avoid confusion with the later distinction (after Frege) between sense and reference. In actual practice, **the inductively developed word is vague *both* in its reference (we do not yet know all its objects) and in its sense (we are not yet sure which part of its eventual description will become the defining part)**. All we have to get hold of is a vague notion of some kind of resemblance between certain things so far encountered. It is important to keep this remark in mind.

same as before, but the latter term refers to something imaginary. Nevertheless, such imagination is just a reshuffling of previous experiences. We have seen horses and have seen horns, and we put their memories together in a certain way in our minds eye (similarly with non-visual memories, of course). Had we not had physical or mental experiences (or abstractions from them) to ultimately refer to, we would have been hard put to give any meaning to the word unicorn. Our minds would remain blank with nowhere to go.

The word is thus meaningful to us, even though we do not claim it to be truthful, i.e. we do not claim it to refer to actual physical unicorns, note well. Thus, we can say that the definition of unicorns is superficially 'true' with regard to its equation of two sets of words, since it is entirely up to us to invent what word we choose as equivalent to the phrase horses with a horn. But the proposition is decidedly materially *false* as a whole, since horned horses do not (to our knowledge so far, at least) exist outside our imagination. If one day such an animal is found in nature, or produced artificially, the proposition might then become true. Therefore, here again, we have a clearly synthetic, a posteriori and contingent proposition.

The word 'unicorn' refers to a relatively concrete imaginary phenomenon. There are of course more abstract imaginations. The word 'bachelor' would be an abstract imagination in a society where all men were in

fact married. Nevertheless, when we examine more closely the terms 'men' and 'married', we still find some traces of visual and other sensory phenomena[19]. These traces come to mind and give some concrete meaning to the abstraction. The same can be said of an abstract term like 'noumenon'; it is not entirely devoid of empirical content[20].

It should be added that the empirical traces underlying abstract concepts may be intuitive (in my sense of the term - i.e. non-phenomenal), as well as or in addition to perceptual (i.e. phenomenal, in a mental or physical sense). For example, the concept of 'field of force' is essentially a construct that refers to experienced physical events like the motions of certain bodies in relation to each other, and we may use pictures with arrows to visually symbolize it. But it cannot be fully *understood* without referring to our own inner experience of volitional 'force' (our will), and to our mental sense of

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[19]   For instance, marriage involves a certain public ceremony, a physical (verbal or oral) agreement, an exchange of gifts, and so on. These images & sounds come to mind to some extent whenever we evoke the concept, giving it some concrete ground. However, it does not follow that *only* such obvious memories are involved, note well.

[20]   If we carefully examine how we actually in practice picture that concept, we find that we project some vague images labeling them as outside or above or behind or beyond ordinary reality, i.e. as 'transcendental'. In other words, 'noumenon' depends on a certain amount of geometrical imagination to be intelligible.

effort and to our various bodily sensations when we push or pull things or are shoved around by things.[21]

All propositions relating to meaningful abstractions, be they simple or complex, physical, mental or spiritual, are therefore also synthetic, a posteriori and contingent.

A true statement is necessarily meaningful – but so is a false statement. Note this well: a false statement is still meaningful; it is precisely because it is meaningful that it can at all be characterized as false. In such cases, the various words it contains are *separately* meaningful, but their *conflation* in a certain sentence (structure) is contrary to fact. If a statement is totally meaningless, it is neither true nor false, because it is saying nothing at all to us.

For example: "today's king of France is a monarchist" is false because there is no present king of France (since it is a republic), even though all the words involved in this sentence are meaningful and its structure is grammatically and logically adequate, and even though the predication of monarchism to the putative king makes sense in abstraction (though it is not inevitable, since a republican potential king is also conceivable). The truth involved could be expressed by transforming the

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[21] In some cases, our personal valuations, like liking or disliking, or desire or aversion, are used as empirical undercurrents in the understanding of more abstract concepts. For instance, the value concepts of beautiful and ugly (aesthetics), good and bad (ethics) would not be fully intelligible without such subjective notions.

categorical statement into a conditional one, saying "if France had a king today, he would most likely be a monarchist".

> Because I am writing for modern readers, I should here note in passing that the modern logician Gottlob Frege would have regarded a sentence like "today's king of France is a monarchist" as involving an empty term, a term *with sense but without reference*, i.e. with a descriptive meaning (an intension or connotation), but without an actual object to which the meaning applies (an extension or denotation). But it is inaccurate in my view to present the case in point in that manner.

> The 'sense' is (only) part of the description, and the 'reference' is also (only) part of the description. For, note well, *we cannot indicate or visualize a particular object without awareness of some of its descriptive elements*; and in either approach, we never recall, imagine or point to more than part of the whole. For example, whether we imagine a king in power in today's France, or recall or see an actual such person, the mental content is almost the same.

> If we are alert to what actually comes to mind when we evoke the things defined or their definition, we see that there is no essential difference between the two mental events; either

way, we think of *a few cases and a few of their characters* to direct our attention where intended. Whether they are real or imaginary, there are no characters without cases and no cases without characters. The difference between sense and reference is thus at most one of emphasis; very often the mental content is identical either way.

Frege's doctrine of sense vs. reference, one of the basic premises of modern logic, is therefore misconceived, because insufficiently attentive to our actual processes of thought. No wonder it led to the Russell paradox, which stumped Frege. The correct alternative is the understanding that meaning may be real or illusory, and must be one or the other, and that even the illusory is somewhat based on some reality (since it at all appears). With this understanding, one sees that one cannot string words together just any way, however one likes.[22]

As regards 'purely formal' abstracts, like the symbols X or Y used in logic or in mathematics for variables, although they are the nearest conceivable thing we know to analytic, a priori and necessary constructs, it is clear that *even they* depend on some experience, since if we could not instantiate them with some example(s), they would be quite meaningless to us. Logic deals with assertoric statements, or at the very least with wordless

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[22]   See my *Future Logic*, chapter 45, on this topic.

intentions. If nothing is explicitly said or implicitly intended, no judgment needs or can be made.

It is absurd the way some formal logicians or mathematicians ignore how their abstract constructs historically evolved, and what is required to make them intelligible in every new human being in every new generation. It is important for these people to keep in mind the distinction between the verbal level of thought and the underlying intentions and volitional processes it involves. It is important for them to focus on the deeper goings on (and their respective geneses), and not get dimwittedly stuck in superficial matters.[23]

For example, the form "S is P" (subject is predicate) is a convention, in the sense that the order of the symbols or words "S", "is", "P" is not very important, what counts is their meanings. We could (in English, and no doubt in other natural languages) place them differently, as "P is S" or "P S is" or what have you. Such changes of position are found in poetry and especially in old English (for example "blessed are the meek"). We convene "S is P" as the standard order, so as not to have to keep explaining what role each of the words is meant to have[24]. Such formal rules are practical, rather than

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[23]   This remark corresponds to the distinction between "surface" and "deep" grammar by Noam Chomsky. The surface may change, but the deep stuff stays the same.

[24]   Similarly, the order of antecedent and consequent is conventional; i.e. it could be, and in practice often is, reversed (though the underlying intention remains the same).

theoretically significant or merely (as some moderns contend) arbitrary.

In sum, it is doubtful that *any* propositions can be characterized as analytic, a priori and necessary in the precise sense Kant intended. All human knowledge needs have and does have some empirical basis, however indirect. Otherwise, it is not true knowledge, or even false knowledge, but merely meaningless noises or doodles. It is "idealistic" in the worst sense of the term, i.e. divorced from any and all reality. Certainly, almost all knowledge is rationally processed to some extent, but *it is impossible to entirely separate the purely rational elements from the purely empirical elements* as Kant attempts.

A priori **forms**. Now let us consider an actual example of Kant's: "all bodies are extended". The reason I left it till last is because it involves more complex issues.

What is evident and sure is that we would not be able to formulate such a proposition if we had no experience of a world with bodies extended in a space, or at least of an imaginary such world. For we could well have been born in a world where we experience only one thing, viz. just light (or even, just darkness or a dimensionless point); we would still be conscious in that context, but would have no experience or imagination of extended bodies. It follows that this proposition of Kant's is in fact quite synthetic, a posteriori and contingent.

Here we touch upon Kant's theory of (imposed) "forms" of sensibility and understanding, according to which our cognitive faculties supply certain non-empirical factors of knowledge (notably space and time, and causality, among others). These components of knowledge are, according to him, *both a priori and synthetic* – that is to say, they are purely 'rational', in the sense of 'known independently of any experience', and yet *somehow* give us true information about the world, the immanent world.

In truth, we cannot rationally predict experience without any appeal to experience. Space (in at least two dimensions) and time, and likewise causality (i.e. causation, in this context) and many other abstractions, which Kant regards as categorizations imposed on experience by us, are all based on some experience and never on reason alone. Reason cannot function without some experience.

For (to repeat) we might well have existed in and experienced a unitary world without shapes and sizes or distances, without movements or other changes, and without concatenation of events (and a fortiori, without the negations of such things and events) – and then we would never have been able to understand such concepts.

Therefore, such categories are not mental formats that somehow impinge on and structure experience *before* we actually take cognizance of it. They are rather *given in experience and taken from it*. They are ways we mentally order experience *after* the fact, i.e. after we have already

experienced it (and we so order it so as to more efficiently think about it and deal with it in action). They are a posteriori, not a priori.

Moreover, space, time and causation are not only applicable to sensory experiences. They are also applicable to mental experiences. It is true that apparently material bodies are visibly extended in 'space', go through visible changes in 'time' and often occur in visible conjunctions, i.e. with 'causation'. But these visual properties are not reserved to the seemingly material domain. They are also applicable in the mental domain. The images we imagine (while awake or in dreams) are also evidently extended and changing, and sometimes conjoined and sometimes not.

We should also keep in mind that the seemingly 'external' and 'internal' spaces, times and causal chains might or might not be the same or interactive. It follows that if Kant's motive in proposing these forms was to differentiate sensory experience from imaginary experience, he failed – because there is no differentia in their use in either domain. It follows too that these forms cannot be used to explain how or why 'physical' experiences are transformed into 'mental' ones – because if this were the purpose of such forms, why would they also be used on mental experiences?

Thus, "bodies are extended" cannot be proposed as a complete definition of seemingly material bodies, as against mental images, with reference to the visual

experience of extension *alone*. It may suffice for mathematicians, but it does not for phenomenology-inclined philosophers. To define such bodies, we *also* have to refer to touch sensations, especially the experience we have of resistance to pressure by apparently material bodies. Mental images of such bodies do not have this tactile aspect, because (it seems to me) we are unable to concretely imagine touch.[25]

Another point worth making here in rebuttal of Kant is the very fact of his communicating with us through his writing. When he says: "bodies are extended", he is assuming these words mean something to us, and moreover the same as they mean to him. He claims this something is purely rational (i.e. "analytic"); but as indicated above such claim is logically untenable, because words must ultimately (if not directly) at least refer to an imagined experience, if they do not refer to a physical one. Words without *any* experience whatever anywhere behind them are meaningless, i.e. devoid of content.

Both he and we must refer to common experiences to understand the words, and to share them. Whether these experiences are of a physical world or a merely mental one makes no difference, provided we have a domain in

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[25]   Kant would presumably add substance (in the sense of subsistence) as an essential attribute of bodies. But I leave this complex issue out of the present discussion, since I deal with it in other contexts (notably, with reference to Buddhist doctrines).

common. If he was (as logically he may be taken to imply) fundamentally isolated from us, both physically and mentally, in that "bodies", "are" and "extended" were purely rational terms, he couldn't communicate with us on this issue. We would have no shared ground, no channel of communication.[26]

Conclusion. The analytic/synthetic and a-priori/a-posteriori dichotomies have some traces of truth in them, in the sense that human knowledge is formed by both reason and experience. It contains both deductive and inductive components. But these components cannot readily be separated; they are too intertwined, too mutually dependent. Some partial separation is of course possible, but not a thorough separation such as Kant attempts. Nothing is purely deductive or purely inductive.

Even the laws of thought, the principle of induction, and various other generalities of formal logic, depend on experience for their meaning and for our understanding of them. Before we can say "A is A", or find a statement to be paradoxical, or differentiate between truth and falsehood, or make a syllogistic inference, or understand

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[26]   Of course, I could argue that Kant is a mere figment of my imagination. This is the solipsist hypothesis, which is not easy to disprove deductively, but which may reasonably be considered unconvincing given the degree and richness of imaginative power it presupposes one to have.

what any of the preceding means, we need to have some experiences[27]. Our cognitive faculties cannot function without content, just as our hands cannot manipulate anything if they are empty.

The logic proposed by Kant *does not correspond to the logic of actual human discourse*; it is a mere incoherent invention of his. He may have pretentiously called it a critique of pure reason, but I would call it an impure critique devoid of reason. If he describes reason erroneously, he is logically bound to end up with absurdities like the unbridgeable gulf between things-in-themselves and things-as-they-appear. But such difficulties are not the fault of reason; they are the fault of (his own) *un*reason.

Nevertheless, Kant has been hugely influential on modern logic. The pursuit by many modern logicians of "formal systems" that are freely developed independent of experience may be regarded as an enterprise inspired by Kant.

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[27]   I am always amused and amazed by logicians or mathematicians who think that they can manipulate "pure" symbols independently of all experience. They ought to stop and consider, for a start, their own experience of those symbols and of the actions they personally perform with them. They are writing on paper (or an a computer), are they not? They are hoping other people will read their stuff (and agree with them), are they not? All that is experience, too, and cannot be dismissed as irrelevant.

The logical-positivists[28] were mostly German logicians, functioning under Kantian premises. It is not therefore surprising that most of them (with the notable exception of Kurt Gödel, who was their nemesis from the inside[29]) adhered to a philosophy paradoxically composed of both extreme rationalism and extreme empiricism at once; that is, a philosophy upholding reason apart from experience and empiricism apart from logic, "and ne'er the twain shall meet"[30].

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[28]   Including here (for the sake of argument) members of the Vienna Circle and the likes of David Hilbert, Ernst Mach and Ludwig Wittgenstein.

[29]   I must here give thanks to Yourgrau's account of Gödel's work, which (partly because of its semi-biographical format) has considerably changed my opinion of Gödel's importance in the history of logic. My few past comments on this logician, in my *Future Logic*, might have seemed disparaging, because I assumed him to be essentially an ally of the formalist Hilbert. Yourgrau's book has taught me that Gödel was consciously critical; i.e. that he did not merely stumble on his anti-formalist theorems, but purposely pursued them on principle. I see now that he was indeed a great logician, because he permanently defeated the modern proponents of a purely deductive logic on their own terms.

[30]   To be more precise, they sought to adhere to logic, which they essentially understood as *deductive* logic, and they largely ignored *inductive* logic, which is precisely the tool through which reason assimilates experience. So-called formal systems are artificial concoctions, in that they arbitrarily simplify the complexity of logic (i.e. human discourse), by attempting to reduce it all to a manageable number of axioms and rules from which all theorems can be proved. This abstract and mechanical approach to logic may seem interesting to some people, but it is in fact just narrow and rigid in its mentality. It prematurely blocks research into all the

manifold aspects and dimensions of our natural logical discourse, just so as to satisfy a penchant for order and finality.

3.   THEORY OF KNOWLEDGE

From the start, Kant wrongly defined the components of human knowledge as "**representations**". This seemed obvious to him, considering the philosophies of Locke and Hume that preceded his, with their belief in sensory "impressions" and derivative "ideas", which might or might not have been caused by and in principle correspond to (i.e. *re-present, present again*) material objects external to the subject. For Locke, the answer to that question had been yes, whereas for Hume it had been no. Kant was trying to revive Locke's yes after Hume's no, by building a more complicated system of justification.

Kant considered representations as of two kinds: intuitions[31] and concepts; the former are "immediate"

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[31]   Nowadays, the word insight might be preferred in this context to that of intuition, which has a much more subjective feel to it. I use the term intuition preferably only in the context

representations and the latter "mediate". Representations could be "pure", i.e. entirely *a priori*, pre-empirical in origin; or "empirical", i.e. a posteriori, dependent on experience. **Pure intuitions** are those that give all other perceptions their forms. These are the "**forms of sensibility**", namely intuitions of space and of time, which turn our disorderly sensations into actual perceptions. **Pure concepts** are those that similarly give their basic forms to conceptual knowledge. They are the "**forms of understanding**", namely the twelve "categories" listed by Kant on the basis of Aristotelian logic.

All this of course must not be taken on faith by us, but must be regarded as an inductive hypothesis, a mere theory proposed by Kant. But to his mind, it was the only conceivable way human knowledge could be saved from the logical doubt Hume had instilled. Kant's reasoning was that, since knowledge could not be securely based on empirical grounds alone, it was necessary to ground it in some sort of constitutional necessity. Instead of the traditional view that space and time and categories like substance and causation are abstractions from experience, he proposed a theory of *structural conditioning*. This was not an appeal to innate basic ideas, note well, but rather a sort of *cognitive determinism*.

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of self-knowledge. However, some people still do use the term in a Kantian sense.

Following Aristotelian and earlier philosophy, Kant distinguished between matter (here, I suggest, meaning phenomenal content as it appears to us, whether judged material or mental) and form (meaning the abstract aspects of knowledge, the ordering of appearances by reason). The former is known (directly or indirectly) through sensation, the latter by logic. The study of the sensory aspects of knowledge Kant called "Aesthetic"[32], and that of the logical aspects is called "Logic".

Kant qualified his theories in those fields as "Transcendental", ostensibly because he believed in pure/a-priori intuitions and concepts, as already mentioned. However, his use of this qualification was also intended to suggest his theories were justifiable as it were 'from above' or 'from the outside', and therefore were superior to anyone else's and beyond anyone else's capacity to criticize.

Kant's vision of knowledge has some credibility, because it of course contains many truths. The trouble is that it also contains many misconceptions and wrong emphases, which lead to great difficulties and inconsistencies. In some respects, Kant's understanding of human knowledge was true to tradition; but in many issues, though he often took up traditional terminology, his interpretations were quite bizarre. Novelty is of course no sin, but in some cases it is based on foolishness.

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[32]   The modern sense of that term is of course, the study of (the impressions and concepts of) beauty or ugliness.

In truth, knowledge is not only based on experience, but also on logic or reason. If knowledge was limited to experience, that is all it would contain. We do need some additional ingredient to turn experience into conceptual discourse; and that is not some presumed processing by machine-like faculties, but simply the *volitional* application by the subject of all the laws of logic (whether these are realized *ad hoc* through personal insight, or known through wide-ranging in-depth theoretical study[33]).

To be an empiricist is good, if we understand by that that all knowledge must be anchored in experience. But to be an empiricist *only* (as Hume had the ambition to be) is bad, because that posture ignores the rational element that turns experience into conceptual knowledge. Indeed, to be an empiricist only is impossible – it is only made to seem possible by concealing one's debt to rationality.

Rationality is needed even to argue for a philosophy of pure empiricism, which means that such a philosophy is inherently not purely empirical. One must admit some rationalism, to be able to at all discourse, and to take the influence of logic into account. Inversely, to be a rationalist *only* is also bad and impossible, as this implies ignoring experience or hiding one's debt to it. Without experience one would have no content to reason about.

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[33]   Which theory is of course based on many people's personal logical insights, let us not forget. There is no theory with "transcendental" validity, above human effort, experience and judgment. Not even logic makes such claims for itself.

Thus, *empiricism and rationalism should not be pitted against each other, but allied and harmonized*. Kant understood this need and built his system with it in mind. His intentions were laudable. The trouble is that he denied the *joint* input of experience and reason in *some* items of knowledge. Only the so-called empirical intuitions and concepts were each part empirical and part rational. The so-called pure intuitions (of space and time) and pure concepts (of the twelve categories) were all to be *purely 'rational'*, devoid of any dependence on experience. They were forms of sensibility and understanding known prior to any content, by virtue of our possessing cognitive faculties.[34]

These basic intuitions and concepts were *not form drawn out from content*, abstracts isolated from experience, as Aristotle had suggested. Instead, according to Kant's "Copernican revolution", they *gave form to content*; they independently shaped experience in humanly sensible and comprehensible ways (with no obvious guarantee of accuracy). In my view, Kant's theory was not without intelligence – humans do add something to experience, and we should be well aware of it; but he misconceived

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[34]   Strictly speaking, we should not accept the label of 'rationality' with reference to Kant's a-priori forms. Reason presupposes and implies volition, and Kant's a-priori forms are mechanical impositions on us. The two concepts are really antithetical.

precisely how this might occur, since his theory gave rise to possible and actual difficulties and contradictions[35].

We can and must, in my view, reaffirm that the basic intuitions (of space and time) and concepts (of the twelve categories) are both *empirically and logically* based, and not purely rational as Kant proposed. The missing element in Hume's solely empiricist vision of human knowledge is the volitional logical *work* that orders and organizes experience – it is not some blind *mechanistic* imposition on experience as Kant implies. Space, time, causation and other basic concepts are not forced upon us, but are convictions acquired by personal application of logical insight to experience.

Perception and conception. Let me here propose an alternative theory as to what conceptual cognition "adds" to perceptual cognition, so that no misunderstanding arise from the above statement of mine, and so that the "grains of truth" in Kant's theory are highlighted and at the same time the "husk of falsehood" are separated out of it.

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[35]   Notably, the question: how would Kant obtain knowledge of his system of knowledge if his mind was really functioning the way his system claims? How would he *overview* space and time or causation and other categories, if he could not refer to them beyond his mind? He denies humans access to ultimate reality, yet claims for himself just such access in the very act of doing so. It is such failures of reflexive thinking that makes Kant's philosophy incredible.

In Plato's Idealist philosophy, form is totally separable from content (matter or substance), ontologically and not merely epistemologically. In Aristotle's more down to earth rebuttal, form and content are ontologically inseparable, though epistemologically distinguishable. Kant was in that respect clearly closer to Plato, though distinct in other respects. My view is closer to Aristotle's, though not identical with it.

In my view, *all perception is immediate*, not just perception of space and time; and indeed, space and time are far from entirely perceptual items of human knowledge. Furthermore, *all conception is mediate*; and it cannot be said that any of the categories Kant lists are entirely a priori concepts. *No percept or concept is entirely purely rational or a priori*; all items of knowledge rely on some empirical data, some contact with some aspect of reality. Kant's proposed divisions of knowledge can only result in divorcing the subject from the object, or human beings from reality, and thus lead to intractable paradoxes.

Rational acts, such as affirmation and negation, measurement, comparison and contrast, all do indeed depend on human intervention. Things just are (whatever they are, whatever they happen to be) – they never exist negatively or primarily in relation to others. Qualitative and quantitative similarities and dissimilarities do not exist if they are not perceived or conceived *by a subject*; they remain latent if they are not made objects of

someone's *consciousness*. Yet at the same time, they are objective and not subjective, in the sense that whether potential or actual they are still "properties of" the object.

Without some conscious subject, the potential sameness or difference of the objects would never be "brought out". But the subject does not merely fantasize such abstract properties; it refers to observations of the objects concerned. Rational acts only actualize a potential that already potentially "belongs to" the object, they do not create something at random. More precisely, such abstract characteristics are concrete mental phenomena produced by the subject in his/her mind *with reference to* observations of certain objects, under various conditions of the subject (e.g. position in space and time during observation) and/or objects (e.g. placing a ruler on them, or looking at them with a clock in hand, or making other experiments with them).

So we can accurately say that abstractions relate to the object, are about the object – for the object causes them in us, and such causality by the object counts as an objective property of the object. Although such abstract properties of objects cannot become manifest if no one is conscious of them, it does not follow that they are pure figments of the imagination, for the consciousness involved is primarily beamed at the objects concerned. The potential existence of the abstracts in the subject's mind may be regarded as part of the overall 'nature' of the objects. The nature of an object is not only what is

inscribed in it, but its whole place in the universe, i.e. its possibilities of relation to and action on other things.

A '**property**' need not inhere *in* the object; for we may also count as an object's 'property' a thing (whether physical or mental) that exists *in some other* object (including a subject) provided that thing is somewhat caused or influenced by the first object. The term property can and must thus be understood even more broadly, with reference to *anything that relates in any way to* (e.g. is an effect of) the object at hand, and not just to things that seem to be residing within it[36].

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[36]   In my book *Future Logic*, chapter 45, I demonstrate that the Russell paradox is due to overly hasty "permutation". Since permutation sometimes leads to paradox, it cannot always be performed. From this we can infer that a property of something does not necessarily reside in that thing. In some cases, then, the relation between two things should rather be viewed as an abstract bridge between them, i.e. as something existing outside the both of them. An important other example of impermutable proposition is the form "X is potentially Y" (regarding this, see chapter 67 of the same work). Regarding the form "**X has Y**", which we usually associate with property, note that it does not always imply that Y resides in X. In some cases, e.g. in the case of "some roses have pink color", the predicate (pinkness) is thought to be part of the object (these roses). But in other cases, we do not intend such an implication; e.g. "John has a wife" does not mean the wife is in John, but signifies a complex and largely abstract and even conventional relation between two separate entities. *It follows from this that the form "X is Y" is also twofold in meaning*, note well. Thus, "some roses are pink" suggests to us that the predicate pink is in the roses, but "John is married" does not mean that the quality of being married resides in John.

Once this is understood, many of the difficulties encountered in epistemology and ontology fall away. Note this comment well, because it is of earth-shattering importance to philosophy. Whatever the objects we perceive or conceive cause or influence **in us** may be considered as properties **of theirs**. Simply because the concrete residence of the property is outside the objects concerned, does not per se make them less of a property of theirs. That the effect the objects cause is in us, the subjects, does not make the effect any the less theirs.

- In the case of **perception**, some concrete (phenomenal) aspects of an object are *directly* cognized by the subject. In the case of a physical object, the perception is (we may legitimately hypothesize) *as direct as* in the case of a mental object; that is to say, it does not occur through the intermediary of any sensory impressions or ideas (that is not the function of sensations and ideas): i.e. it is not perception of a mental object "caused by" or "representing" the physical object, but perception of the physical object *itself*, note well. It is due to this directness of perception that we can test our conceptions (and say whether or not they sufficiently "correspond to" the objects concerned).

- In the case of **conception**, however, cognition is *indirect*. That is, what we cognize is a concrete *mental* phenomenon (called an abstraction) that is *produced by* some concrete physical and/or mental

phenomena under perceptual scrutiny. Because the
concrete mental phenomenon so produced is *causally
related to* the concrete physical and/or mental
phenomena under consideration, it is regarded as an
external property of theirs. Such a property *outside* an
object in another object (here, a subject's mind, in the
case of physical percepts, or another part of the same
mind, in the case of mental ones) is called 'abstract'
to distinguish it from the 'concrete' properties
perceived *in* it.

The 'property' under consideration here is **abstract**,
because it consists of a causal relation (a causation or
influence), plus a term, viz. the objects perceived (the
cause or influence), and is not to be confused with the
other term, viz. the mental phenomenon that it concretely
consists of (the concrete effect of the objects in the mind
of the subject). Thus, we say somewhat conventionally
that what is cognized in conception is not (entirely and
exclusively) phenomenal, yet it is related to perceptual
aspects of the objects concerned, it is something to do
with or about them that is known indirectly.

Note well that though an abstract property does not
strictly exist out there in the objects concerned, it is still
(if well formed in accordance with logic) an *objective*
fact in that the concrete effect the objects cause in any
subject's mind indeed do exist there and do "belong"
jointly to the objects and the subject. Note too that
though the abstract resides in the subject's mind, it is *not*

subjective; it is not something injected into or projected onto the objects by the subject (or the consciousness emanating from the subject), or something existing in the subject's mind in detachment from the objects (though it may be the latter, if logic has not been applied correctly).

In other words, if and so long as our knowledge is based on observation of the objects concerned, and is processed by inductive and deductive logic to the best of our ability, we can confidently rely on it. Though this knowledge is in us, it can under these reasonable conditions be considered a property of theirs. In this sense, the knowledge, though it is in us, and processed by us, is quite objective.

Only by such harmonious blending of reason and experience can we hope to avoid transcendentalism or idealism. Kant's attempt to reconcile reason and experience did not sufficiently stress the mutual dependencies of reason and experience; he kept the two much too far apart. An abstraction is neither phenomenal nor noumenal. It is not exactly perceptible, yet it is not out of this world. It cannot be reduced only to percepts, but it cannot be altogether divorced from percepts. And so on – this is the more subtle line of thought needed.

4.   EXPERIENCE, SPACE AND TIME

Among Kant's fundamental errors was his assumption that empirical data is initially without unity, being a confused mass of myriad sensations, and that it needs to be united by rational means of some sort, *before it can at all constitute an object of perception*.

On this basis – and the use of many arbitrary assertions and woefully circular arguments[37] – he argued for the primacy of his a priori "forms of sensibility" (pure intuitions of space and time), i.e. that such "knowledge" of space and time is antecedent to (if not precedent to) any experience to which they are applicable and which they sort out and explain.

On what basis could Kant possibly claim to know that raw data is not unitary and needs unification, if he denies

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[37]   Which I will not get into the details of here – to avoid turning this essay into another thick book. Some replies to Kant's arguments are effectively given in this section further on, when I present an alternative thesis.

the possibility of access to raw data without a priori categories? How would he know about raw data and about the a priori forms, without reference to them first? How would he explain and justify his claim? Such a claim on his part is (if not plainly self-contradictory) of necessity arbitrary; it constitutes a hidden first premise of his philosophical system that he treats as axiomatic without valid reason. There is nothing obvious or absolute in this assumption of his. It is an unnecessary complication and mystification of the theory of knowledge. No transcendental knowledge of any sort is involved, but just say-so.

On the surface, Kant's supposition that sensations need to be integrated before perception becomes possible might seem reasonable. If the perception is as commonly described perception *of mental products of* sensations, i.e. if what we perceive are presumed "representations" rather than the presumed external causes of sensations, then indeed one would expect some mechanism to fuse together the myriad sensory impressions (of the various sense organs, and the many parts of each sense organ). In ancient philosophy, this was called the "common sense"; in neurology, one would refer this task to the brain.

However, this explanation of the role of sensation is a far from certain *theory*. Indeed, as I argue repeatedly here and elsewhere, it is an internally inconsistent and therefore untenable one. But even ignoring the paradox it entails, just consider the empirical facts involved. We

cannot credibly even suppose that sensations are numerous and complex enough to produce images, sounds and other phenomena *as rich as* those we encounter in perception of physical objects.

When in my daily walks I look at the blue sky, the mountains, the lake, the greenery, the passersby and the colorful ducks, I do not for a moment suppose I am seeing images of such things great and manifold in my head, but naïvely consider that I see the things *themselves*. To opt for the hypothesis of images would mean that I am producing or reproducing in my mind an enormous quantity of data; just think of the amount of information involved in such an experience. Why suppose I am experiencing a parallel universe in my head, when I can *just as easily* suppose that I am seeing the universe itself? There is a difficult hypothesis either way, so why not opt for the simpler, more obvious supposition?

If philosophy has any need of a "Copernican revolution", this admission of *perceptual realism* (as against the prevalent perceptual idealism) is surely it. It is a revolution much more radical than the one Kant proposed, and much more convincing.

This natural supposition of the common man seems much more reasonable than the one proposed by philosophers and scientists. It compares the qualitative and quantitative characteristics of what we call mental phenomena and what we call physical ones. The contrast

in clarity and complexity is all too evident, and sufficient to suggest *direct* perception of external objects. It is true that some dreams we have are very sharp; some so much so that they seem like 'visions'. But the large majority of visualizations and dreams are rather vague or approximate. Sensations could never conceivably suffice to reproduce the reality we routinely perceive.

Indeed, some scientists have expressed surprise at the simplicity of sensory messages (electrochemical processes in the nervous system), compared to the complexity of the content of consciousness they are supposed to produce. This suggests that ***the process of sensation has little if anything to do with perception as such, but rather concerns memorization***. Through perception, we independently judge the correctness and reliability of our simultaneous memorizations. Without this distinction, we would be hard put to explain how we evaluate individual memories, and judge them right or wrong; all memories would be uncertain, impossible to evaluate.

Memorization is what makes imagination possible. Imagination is only possible after and as a consequence of memorization, in the way of a rearrangement of memories of experiences or of abstractions from such memories. Mental phenomena are – it is much more reasonable to suppose – merely weak and imperfect reflections of physical phenomena. Imagination, the willful recombination of memories, does not affect what

we perceive, but only what we remember. Imagined theses, i.e. hypotheses, can be tested because we can refer to perception independent of memory; if we had no direct perception of externals, but only apparent memories, it would be useless to recombine them, because we could never test them.

Memory of an experience is not identical with the experience. The experience is primary, a given; the memory is secondary, a construct out of sensations. Apparent memories of external objects could not properly be called memories until they are validated through independent, direct perception of those objects. Until then, they have the logical status of mere "impressions or ideas" (to use Hume's terminology) – i.e. they are just mental items, themselves not validated and therefore incapable of validating others. This is of course the 'grain of truth' in Hume's theory, which gives it some power of conviction. But the 'husk of falsehood' in it is Hume's willful failure to take direct perception into consideration, which results in self-contradiction.

Memories can be 'good' or 'bad', i.e. accurate or inaccurate renditions of certain experiences. Memories can in time deteriorate (or be lost); we can also train our memory to improve. We judge memories with reference to the experiences they claim to represent or correspond to, using *adductive* techniques – which means we regard them collectively as somewhat hypothetical. We can

instinctively[38] usually tell the difference between a memory and an imagination, but sometimes the latter are confused with the former. This is why we need adduction based on actual experience: to objectively judge the difference.

Mentalists and subjectivists express incredulity as to the possibility of direct consciousness of objects, and aver instead that cognitive processes necessarily produce mirages. It is unthinkable in their view that we directly perceive *physical* phenomena, but quite conceivable that we directly perceive *mental* phenomena. I ask: why this prejudice? Surely, the latter is *as amazing and inexplicable* as the former. In either case, consciousness of one thing by another is something best described as miraculous, for lack of a better word – whatever the presumed substance of its objects or distance from the subject. If we lose this sense of wonder, and regard consciousness as just some other routine "phenomenon", we are skimming over something very, very surprising.

Those who prefer inner perception to outer have no argument in support of their thesis. The very distinction between inner and outer depends on the presupposition that we can tell a difference between them, *if only in appearance*. It follows that, at a phenomenological level, inner and outer – i.e. mental and physical – are on the same plane, equally capable of being the true state of

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[38]   That is, by introspection or intuition, perhaps by "feeling" the different ways they are stored in the brain.

affairs. There is no *a priori* or *ab initio* basis for a prejudice, one way or the other; the issue can only be resolved in a wider context, with the help of inductive logic.

The **phenomenological** truth of human knowledge is exactly the reverse of how Kant views it: first we experience raw data, and then only do we mentally process the information so obtained. Raw experience is *experience of the totality of the here and now within the immediate range of one's consciousness*. It is essentially pure of rational interference, though reason is quick to try sorting it out almost as soon as it occurs. Thus, experience is initially unitary and only in a second phase is it *rationally* made to explode into seeming multiplicity, with variations in space, time and circumstance.

> This is a truth evident to anyone who has practiced meditation to the stage of contemplation. **One is constantly in the here and now, even though the scenery around one changes continuously in various respects**[39]. In this cognitive posture, one is observing without comment of any sort (verbal or non-verbal). And

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[39]   This perspective perhaps explains the Zen *koan* "Bodhidharma didn't come to China" (Dogen, p. 152). It means: China came to Bodhidhama. That is to say, the stream of appearances associated with going to, being and traveling in China, *including* the appearances of Bodhidharma's body in the midst of these geographical locations, was present in front of (or all around) him – but he never moved, never went anywhere (other than where his soul was all along).

indeed, even if thoughts do arise, they are viewed as just part of the scenery. The non-here and/or non-now are mental projections in the here and now; we here and now remember or imagine things beyond the here and now.

The self *in fact* always resides in the here and now, even if its attention is usually strongly drawn towards some place else and/or some other time. There seems to be a natural force (of varying intensity) pulling us away from the here and now, perhaps for biological reasons of survival. Nevertheless, through a contrary effort of stillness and silence, we can volitionally bring our awareness back in the here and now; and with much training this can become a habit.

Buddhist psychology has, in my view, well explained what it is that draws us out of the 'here and now' into the 'there and/or then'[40]. It is the pull and push of desire (and aversion). We cling

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[40]   Which we might identify with *nirvana* and *samsara*, respectively (though I do not pretend to have personally consciously experienced nirvana). Many useful illustrations are suggested by Zen masters in this context, such as: the still and empty self experiencing passing things and events is likened to *the hub of a wheel*; imaginations relate to other objects of experience like *clouds in the sky*, floating around in the foreground without really affecting the background. Note that the here and now is not a narrow expanse: since it has no boundary, it is potentially and therefore ultimately the "*vast emptiness*" of all space and time (to borrow a phrase from Bodhidharma in Dogen, p. 138).

to (or away from) some passing content of the ever unfolding here and now, and become absorbed by it. Our attention becomes locked onto it for a while, fed by and feeding memories and fantasies. To avoid this malady, it is necessary to practice non-attachment.

The content of raw experience is essentially a continuous field, not only at any given moment but also from moment to moment. The division of experience into moments is already a rational act; experience itself is one across time. More precisely, experience is only of the present, and any consideration of past (memory) or future (anticipation) is rational rather than experiential. We are always in the present, whose changing appearance is all part of the present. Mental impressions of memory or anticipation may float over more present-seeming appearances, but they must be regarded phenomenologically as in the present too, and only separated out of it by rational reflection.

Similarly, the imaginary cutting up of the visual and other phenomenal fields into distinct parts – and on a later, more abstract plane, the distinction between whole and parts of space as such – this is rational activity that comes *after* actual experience. Such rational acts presuppose phenomena to act on, and therefore must lag slightly behind the experiences they are applied to. Nevertheless, they do not necessarily rely on memory, because what we experience as "the present" is not an

instant, but a moment of time – i.e. the present has a temporal extension, it is not a mere point in time.

Thus, it is we who mentally cut experience up and then bind it together, through various rational acts. These acts occur in the present, like all existing things and events. Before we can locate 'parts' of experience variously in space or time, or classify them together in any way, we must differentiate them from each other. For example, we may choose to consider visible blobs of colors as distinct things; thereafter we may regard these items as spatially or temporally separate, or this color and that one to be the same or at least similar (the same to some extent but differing in shade, say).

It is clear from such analysis that locating things in space and time is a relatively complex act of reason. Before we can actually give things spatial and temporal dimensions (positions, shapes and sizes), we have to engage in numerous simpler acts of dividing and discriminating, equating and differentiating, comparing and contrasting, isolating and reassembling. Note that all of these acts involve affirmation and some involve negation; they constitute rational judgments based on experience. But note too that none of these judgments need involve words, though they often do so because this facilitates them (especially when they are numerous and tangled).

Kant would regard all such rational acts as involuntary a priori characterizations of experience, but they are clearly not that. They are essentially voluntary acts of

conceptualization, of various degrees of complexity. Usually, such acts are so deeply habitual that they are almost automatic. But in truth, they cannot be claimed automatic, because: (a) very often we lazily skip doing them altogether, and (b) if we do choose to do them, we must make a conscious effort to get them done.

Generally, the simpler conceptual acts tend to be done unthinkingly, whereas the more complex ones require more of an intellectual effort. No doubt, Kant was partly misled by this common observation into regarding space and time as "intuited" instead of as conceived. Contrary to what Kant suggests, no conception is needed *to experience* raw data. Concepts are later cognitive tools, used to organize the data *already* experienced, so as to draw inferences from it and build theories around it in pursuit of further information. They are thus far from a priori building blocks of human knowledge; they are quite a posteriori.

Kant proposed his theory of the forms of sensibility (space and time), as well as the forms of understanding (the categories of causality, etc.), in order to explain and somewhat justify our apparent knowledge of a material world beyond our senses, i.e. in the way of an attempt to mitigate Descartes' mind-body dichotomy and Hume's problems with induction[41]. In fact, however nice their

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[41]   One of Kant's motives in formulating his doctrine of space and time seems to have been to differentiate the two phenomenal domains, the physical and the mental. But this is

motive, his proposals aggravated and perpetuated these philosophical difficulties.

Kant suggested, *simply because he could think of no better explanation and justification of external knowledge*, that reason molds experience in accord with these forms. According to this view, the forms of sensibility act on incoming experience in the way of a pigeonhole, and therefore of a straightjacket. But his assumption of forcible limitation naturally implied a distortion of experience by our faculties, for what is limited somewhat is necessarily twisted out of shape – i.e. it is other than it would otherwise be.

In Kant's view, if the forms did not structure the raw data provided by the senses, experience would not be at all possible. He thus pretentiously claimed to know and to tell us "*what* makes experience possible". But his theory certainly does not greatly elucidate that mystery, and it is doubtful anyone could answer such a question in sufficient detail. In any event, it is untrue that we need to know how experience arises in detail before we can at all rely on experience.

That experience is possible is given by the simple fact that it is, i.e. that we have experience. Experience is empirically given. There is no logical need for any other proof that it is possible! As for the reliability of experience, this is not something that can be proved by

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not truly possible, because these concepts have instances in both domains equally.

deductive means as a starting point. It is however something that can be reasonably assumed to begin with, and ultimately credibly established by use of inductive logic.

The argument in favor of experience would go as follows. Experience (whether by inner or outer perception, or by intuition) is *all we have* in the way of concrete content of consciousness. *There is nothing else to refer to* – for abstractions have no existence without previous experiences, i.e. they are evidently rational *derivatives* of experience.

Our abstract knowledge is simply an attempt to report and remember relatively briefly what we have found in experience so far and to try and anticipate what may come into it later. Such knowledge is mostly tentative – i.e. it may be right or wrong – and the way we determine its validity in each case is with reference to both experience and logic.

If experience is taken phenomenologically, as mere appearance, this starting point is quite sufficient, for it in fact *assumes nothing beyond itself*. Once we have experienced something, we *know* what we experienced, and (provided we remember it and remain lucid and honest about it) we will not be fooled by fanciful abstract constructs.

There is of course a need to distinguish between different types of experience: immediate experiences (whether material, mental or spiritual), and their derivatives, viz.

memories, imaginations and anticipations (all of which are mental). Such distinction is partly evident at the outset, with reference to the character and intensity of the experiences, and partly the result of later ordering in accord with inductive logic.

There is no rational realm floating in the air, above, below, before, behind or beyond the realm of experience. The rational realm is an outcrop of the realm of experience. Reason helps humans make sense of the world of experience, *after the fact*. It cannot per se affect, modify or distort experience, because experience (i.e. our experiencing) invariably precedes it.

Reason needs something to act on before it can act at all; it cannot produce experience and it has no power to affect what has already presented itself to us. Reasoning always occurs *in relation to* some given content of consciousness, in response to some occurring or occurred experience. Reasoning cannot exist *apart from* some object of consciousness to reason about. This is true at all levels and in all areas of reasoning.

Consciousness per se has no phenomenal attributes, note well. It is the transparent *relation* between us (the Subjects of consciousness) and our percepts or concepts (the concrete or abstract objects or content of consciousness).

From this phenomenological ground, and the attendant deductive and inductive logical insights in accord with the laws of thought, we can gradually build up a

reasonably true to experience body of knowledge. Reason is an efficacious tool of knowledge, if used with due regard to experience and logic.

Kant on the contrary believed that space and time cannot be found in or grasped from experience, and so can only be explained as impositions of specialized faculties that integrate sensations into perceptions. According to him, we cannot experience anything at all until *after* sensations have been artificially ordered in space and time by these faculties. The "forms of sensibility" thus forcibly *give form* to the sensible; and such ordering is therefore purely intuitive (in the Kantian sense of that term) and not empirical, a priori and not a posteriori.

The implication of such a viewpoint is that our notions of space and time are given and fixed, for everyone and forever. *Yet the documented history of human thought on space and time is that our notions of them are uncertain, varied and changing.* Still today, there are doubts and differences of opinion in these matters, and we continue to hope our understanding of them will further evolve.

This historical fact is sufficient proof that Kant's theory that space and time are not empirical percepts or concepts, but forms somehow imposed by our faculty of sensibility, is wrong. For, to repeat, if Kant's view were correct, there would be no change across human history in our ideas concerning space and time. We would collectively have a definite, common and static view of

them. Our faculties could not adapt to changing data and yield new theories about space and time.

The truth is, our ideas in this field have evolved greatly through history, and also change as we individually grow and become more educated.

The Greek geometers and philosophers developed certain views of space and time. Zeno found certain difficulties in them. In modern times, Descartes invented coordinate geometry. Newton and Leibniz developed their differential and integral calculus. Kant's deterministic-subjectivist view was itself one stage in the historical development of these notions. Many other philosophers have since had their say on the topics of space and time, notably Husserl.[42]

Among recent physicists, Einstein proposed revolutionary ideas, which tied time to space and adopted non-Euclidean geometry for them. Gödel showed that theory left some unanswered questions[43]. Hawking and others have lately greatly affected our views, with

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[42]   We should also keep in mind that there have been reflections on these topics in the East. See for instance, 13th century Japanese Zen master Dogen's essay "The Time Being" (pp. 69-76). Kapleau, who includes part of this essay in his book, considers its insights, "realized … introspectively … through zazen" to "parallel … to a remarkable degree" modern scientific beliefs (pp. 307-11). I don't know about that, finding it difficult to understand fully. But it any case it is interesting and challenging.

[43]   See Yourgrau's instructive and interesting book on this topic.

reference to black holes and the Big Bang. And of course, string theory with its additional dimensions no doubt further complicates matters.

All that goes to show that space and time are *inductively developed* percepts and concepts. Note well that not only the concepts, but even their perceptual basis varies over time: for instance, the discovery of the constancy of the measured velocity of light (through the Michelson-Morley experiments) greatly (thanks to Einstein theory of Relativity) changed our view of space and time. If these percepts and concepts were constitutional or structural as Kant implies, they would be static and independent of all experience.

This simple historical observation demonstrates incontrovertibly the inaccuracy of Kant's mechanistic view of our knowledge of space and time. Kant's view is rightly labeled "Idealism" (though not in the sense of Plato's transcendentally existing Forms or Ideas), because it effectively divorces our percepts and concepts of space and time from experience. His theory implies that they are inventions of our faculties, i.e. ultimately equivalent to figments of the imagination, with no real relevance to or dependence on empirical data.

In my view, space and time are *partly percepts* directly given in experience, *and partly concepts* drawn by us from experience using logic (notably, the laws of thought). With regard to space: its first two dimensions are empirical facts evident through perception, while its

third dimension requires additional logical work to be projected and so is more conceptual. As regards time: we do not perceive any such thing; it is entirely conceptual, though based on the perception of change. We experience phenomena in flux, and postulate time to make such change more reasonable.

More precisely put, regarding space, every *visual* experience involves spatial extension, at least in the sense of having two dimensions (though the latter characterization of space, in terms of dimensions, is a later and more conceptual development). What we call the third dimension (again, later, at a still more conceptual level) is the outcome of a rational attempt by us to make sense of certain apparent contradictions in the first two dimensions. For examples, that one thing seems to (over time) move behind or in front of another, or the effects of perspective (proximity and angle from the observer). To resolve such difficulties at the perceptual level, or interpret what we see, we introduce the third dimension, in the way of a successful inductive hypothesis.[44]

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[44]   Note that we could conceivably adopt an alternative, more positivistic hypothesis, and regard things as really disappearing when they go behind others and regard things as really changing size and shape as they change distance and direction relative to us (or we do relative to them). This possible interpretation of perspectives is not favored because it is much more difficult for the individual to manage in practice, and more importantly because of the *irreconcilable*

The location of auditory phenomena in space is a separate issue. The auditory phenomena are of course perceived, but their placement in space is always an inductive hypothesis, sometimes right and sometimes wrong. Similarly, the precise location of our touch sensations in our body and taste sensations in our mouth depend on an *imaginary* mapping of space, *after* physical space has already been visually perceived and understood. Thus, the phenomenon of space is primarily visual and only secondarily involves the other phenomenal modalities.

Furthermore, there seems to be *two* extensions of space, one mental and one physical. These may overlap transparently, in the sense that we seem capable of projecting some mental phenomena (hallucinations) into outer space side by side with physical phenomena. Moreover, it seems evident that mental phenomena cannot exist if we have not first come into perceptual contact with physical phenomena; that is, mental phenomena rely on memories of physical ones, which by the power of imagination we manipulate (in a second stage), as we will. Thus, mental extension is in a sense *a product of* physical extension. Nevertheless, the two spaces exist, and it would be an error to speak of the one and ignore the other.

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contradictions it implies between the experiences of different individuals.

If we consider *measurement* of extensions (comparing shapes, lengths of lines, areas of surfaces, volumes of bodies), it is possible in both spaces. Such measurement is based on using some concrete thing (like a physical or imaginary ruler) as an intermediary scale, to compare one length to all others. However, mental measurement of internal or external space (the latter by a sort of hallucination) is necessarily approximate (though some people are better at such estimates than others). Physical measurement is considerably more accurate, and we have found many ways to perform it.

The mathematical science of geometry is an attempt to explain and anticipate various apparent regularities in spatial existence. But this science has a great inherent difficulty, in that its basic units of consideration, viz. points, lines and surfaces, are not empirically given, whether in mental or physical space, but require *purely verbal negative suppositions* to be adequately defined. We cannot actually see a point without any extension, or a line or surface devoid of further thickness[45]. We have to specify by means of verbal negation what we intend concerning them. So the points, lines and surfaces dealt with by geometrical theory are clearly and definitely concepts; they idealize percepts, but are not percepts.

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[45]   We only perceive rough approximations of those geometrical units: e.g. extended dots rather than points, and so forth. See my discussion of this in my *Phenomenology* chapters 8.2 and 8.3.

They are, at best, abstractions from approximate concretes; they not purely empirical objects.

All the above factors regarding space are mentioned here so as to remind us that what we call "space" has many aspects and involves many considerations. There is space in the purely *perceptual* sense, as it appears in any and all visual experiences. Visual experience without extension is inconceivable, contrary to Kant's suggestion. We could not see only a dimensionless point; and in uniform light (or even total darkness) we would still see an extended space (or void). Therefore extension (in two dimensions, to repeat) is given in experience and does not need to be as Kant suggested imposed on experience.

Moreover, there is a subsequent development of *the concept* of space, first with regard to a third dimension, second in correlation with other phenomenal modalities (sound, touch, taste), and onward using more abstract considerations. By the latter I mean: giving space a name, developing a theory of space, the notion of dimensions, evolving a geometry of space, first Euclidean and then non-Euclidean, and so forth. At an advanced stage, we realize the relativity of spatial and temporal measurements, and develop a theory of relativity, then a theory linking space and time. And the conceptualization of space goes on and on, for there are still many unsolved mysteries.

Similarly, the word time refers to many levels of consideration, from the pure perception of motion in space and qualitative changes (visual or otherwise) – to very abstract concepts and complex theories. Time is not itself perceived but largely conceived with reference to experiences of motion and mutation. Time is a concept, and not at all a percept (unlike the first two dimensions of space). Indeed, the most perceptual part of change is that which is evident *now* (in the present); change occurring in the past and more so in the future requires still more conceptual means to grasp (notably reliance on memory and on imagination). Propositions have to be formulated and justified.

What is given to us in experience is motion and change; but since these seem to us to imply contradictions, we invent the concept of time to resolve the contradictions somewhat. We say: though this thing or moment differs from its predecessor or successor in my experience, there is no contradiction because they are in different positions in a "time" dimension. We thus invent time, somewhat in analogy to space, although such analogy has its difficulties, since it presents time as static rather than dynamic and fails to clearly distinguish between present, past and future.

We notice, too, that there are apparently an inner time and an outer one. That is to say, mental events call for a

harmonizing concept of time just as physical events do[46]; and since these two sets of events seem to occur in separate domains, we can effectively speak of two time streams. Or eventually, perhaps, one time stream to explain both sets of events. Here again, the issue of measurement arises, using a physical clock or mental metronome (i.e. using certain standard motions or changes for comparison with others).

And here again, the concept becomes more and more abstract and complicated, as we seek to better understand it and build theories around it, and relate it to other things (like space, in the theory of relativity). Certainly, the concept of time is full of difficulties, which I need not go into here, for they are widely known. E.g. How stretched in time is the present? Where have past instances of the present gone, and where will future instances of the present come from? We hope over time we will overcome more of these epistemological and ontological difficulties and others we do not yet notice. Yet the concept of time is very useful, so we continue to use it anyway.[47]

What here should be stressed is that our concepts of space and time are built up inductively from various

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[46] Note this well – it is not merely physical time that presents us with difficulties, but equally mental time. So, it cannot be argued that the difficulties are specifically physical, or specifically mental either.

[47] See also my discussions of issues relating to space and time in *Phenomenology* chapters 2.4 and 6.1-6.3.

percepts. Inductively means using generalization and particularization, adductive logic (confirmation, rejection of theories). These concepts do not, as Kant implies, antedate and themselves form the percepts in some way. We should not confuse the formation of concepts out of percepts, with the Kantian idea that the percepts are formed out of sensations. For it is such confusion that gives Kant's theory a verisimilitude it does not deserve.

For instance, Kant's theory of space seems justified by our common belief that our eyes subdivide the light coming from a physical object, producing visual sensations that are reassembled in the brain to give us a complete image, which is what we allegedly see. But this scenario leads to logical difficulties, as discussed elsewhere. We must therefore on the contrary assume that we perceive the physical object itself, or at least the physical light from it, and not a mental image of it stored in the brain. In that case, the internal consistency of Kant's theory is too shaky and the theory must fall.

Furthermore, we should not be overly impressed by the fact that Kant's ideas on space and time inspired new thinking in subsequent philosophy and science. Most famously, Einstein acknowledged some debt to Kant in this domain. A not-entirely-accurate viewpoint (like Kant's novel subjectivism of space and time) can still lead to correct views (like Einstein's more objectivist relativity of observations to observers). Fanciful notions can give rise to good ideas.

5.   KANT'S "CATEGORIES"

Kant proposed a list of twelve "categories" as corresponding to the "forms of the understanding" that he considered the foundations of our conceptual knowledge. Aristotle had long before proposed a list of ten "categories" that remained essentially unchallenged till Kant. Kant did not modify Aristotle's list, but replaced it with another.

Aristotle's categories were concepts averred to be the highest possible in a classification of all things, i.e. the *summa genera* of existence. Actually, he conceived them and presented them as all the kinds of things that would be subjects or predicates of propositions (by which he here meant categorical propositions of the simplest predicative form 'X is Y'). It was a natural continuation of Aristotle's formal logic to ask what contents one might expect in the propositions under study. Although

this research project was essentially justifiable and interesting, Aristotle made many methodological mistakes in its pursuit.

Aristotle's list of categories included: substance, quantity, quality, relation, place, time, action, passion, position, and state. Aristotle developed this list empirically, i.e. by considering numerous propositions, and noting what the subject and predicate were about. It was not a systematic division and arrangement proceeding from some theoretical considerations, but a random collection of disparate items based on observation.

Briefly put, substance refers to subjects like Socrates (a particular, or primary substance) or Man (a universal, or secondary substance). The other categories refer to possible predicates. These may be quantitative (e.g. is big), qualitative (e.g. is red), or relational (e.g. is louder than so and so), they may indicate place or time (e.g. yesterday, at the market), they may describe some action of the subject (e.g. he hammers the nail in), or resulting position of it/his (e.g. he is tired out), or some passion of the subject (e.g. the page was blown away by the wind), or resulting state of it/his (e.g. it is lost).

Note that a particular cannot be a predicate of a universal subject, but a universal can be a predicate of a particular subject (e.g. Man can be predicated of Socrates) – so substance is also a predicable. Also note that other categories can be subjects if we intend them as

substances, 'as such' (e.g. big size, redness, hammering, etc.).

Now, some of these categories seem *artificial* to me, i.e. I am not sure they can be cast in the role of predicates without forcing them. Take, for instance, the category of "relation". In truth, every proposition is relational. The copula 'is' in the proposition 'X is Y' is, note well, a specific relation between the terms X and Y[48].

A proposition like 'X is bigger than Y' might be called more specifically *comparative*, with regard to size (in this case). I would not regard 'bigger than Y' as a predicate. We can formally permute such a proposition, i.e. fit it into the basic 'X is Y' format, by saying 'X is [something bigger than Y]'. But note that in such event the new predicate is not 'bigger than Y' but '*something bigger than Y*' – and this new predicate *is not a "relation"* but a "substance"!

It is more accurate to view 'is bigger than' as *the relational aspect of* the proposition (i.e. as the 'copula', in an expanded sense not limited to 'is'), and X and Y as its terms (which are called subject and object in such relational contexts). Moreover, such a comparative

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[48] The failure to understand this simple fact has led to much confusion in modern logic. Thus, Frege's arbitrary analysis of 'X is Y' into two components: [X] and [is Y] – instead of into three components: [X], [is] and [Y] – led to the Russell Paradox (see my *Future Logic*, chapter 45). We see here that Aristotle's inadequate theory of the categories was partly responsible for this confusion.

copula can concern some of the other categories (in the sense that 'bigger' concerns quantity, 'redder' concerns quality, 'further' concerns place, 'later' concerns time, etc.).

Again, take "place" and "time". They are not directly predicated, but are *terms* (the objects, Y) of distinct *relational* propositions: 'X is *in* this place and is *at* that time'. In such cases, the copula (relation) involved is not really 'is', but 'is in' or 'is at'. As regards to time, it can be tied to the copula in the way of its *tense*, as in 'X was, is or will be Y', indicating past, present or future predication. In the case of prediction, i.e. future predication, complications are involved – regarding whether the projected event is inevitable, or dependent on both human volition and natural events, or dependent on human volition alone.

Now, consider "action" and "passion". We are somewhat justified in distinguishing them, because this allows us to convert the one to the other; for example, 'X sings Y' to 'Y is sung by X', or vice versa. Apart from that, their formal properties are usually little different, but great care must be exercised in syllogistic reasoning to make sure the putative middle term is indeed one and the same in both premises. Additionally, each such copula has its own rules of inference; for instance, causative propositions ('X causes Y', 'Y is caused by X', and the like) constitute by themselves a whole field of logic, and cannot be treated as mere cases of action or passion.

On the other hand, it is hard to see why "position" and "state", which are presented as the end-results of some "action" or "passion" respectively, are distinguished from each other and from other categories like quantity or quality. Their formal properties are surely the same, and the only way we manage to distinguish them is with reference to *another* proposition – one stating: "this predicate emerged after that action or passion". So, in truth, position and state have no intrinsic justification as distinct categories, but are at best subcategories of other categories.

At a deeper level, the distinction between "action" and "passion" (and their end-results) is not truly as widely applicable as it may seem at first glance. If we consider aetiological issues, they are seen to refer specifically to volitional contexts, i.e. to action in the sense of change through one's will and to passion in the sense of change against one's will. For examples, crushing is action and being crushed is passion. In this more limited sense, even a static event involving restraint of willpower, such as a man just sitting (rather than doing anything else), is an action.

In this perspective, all so-called actions of things devoid of the power of will, i.e. functioning exclusively under determinism, or even spontaneity, such as stones or machines, or subatomic particles – are really passions in a large sense. This means that the terms action and

passion as initially apparently used are confused and equivocal.

Thus, Aristotle's proposed categories are not all on the same level of abstraction, and many of them fudge many meanings. Some are not clearly mutually exclusive though they should be, and some ought to include others but do not do so. There are many ambiguities and unanswered questions in this list. Moreover, how can we be sure the proposed list is *comprehensive* – why not leave the list open-ended, allowing for new discoveries and insights?

Most important, Aristotle's listing is flawed from its very conception, because it effectively presupposes that all propositions (or more precisely, all categorical propositions, and by extension the categorical-looking antecedents and consequents of hypothetical propositions) are 'predicative' (i.e. truly 'X is Y') in form. But, though all (or maybe just most) propositions can be recast in the form of predications by judicious permutations (as in the example above given), it does not follow that their full meaning is conserved in such a logical operation.

The non-predicative forms are not to be dispensed with or glossed over by logicians; they are interesting and important in their own right. Permutation is an artifice, which we find convenient in some situations, but it must not be overestimated. Because of the silly presupposition that "is" is the only ultimately significant copula,

Aristotle prevented future logicians from seriously studying categorical propositions other than the standard classificatory form.

Moreover, Aristotle naturally pursued this idea by trying to force all *terms* into the corresponding subject-predicate format in his doctrine of the categories. To do so, he had to artificially merge part of the copula with the object in many cases. To top it all, he overconfidently declared the search for categories closed at the round number of ten. Even if his categories were individually worth formulating, he had no right to assume them together exhaustive and thus to arbitrarily arrest further research.

It is only in modern times that this Aristotelian scheme began to be challenged. Kant was the first (or one of the first) to challenge it, though what he offered in exchange was not entirely satisfactory either.

The important things to note here are the following: Aristotle's search for the top genera, a list of concepts that include all other concepts, is not *per se* illegitimate; nor is his empirical method of pursuing this goal to be fundamentally criticized. His methodological sins here were rather: that he wrongly assumed all propositions were fully reducible to the 'X is Y' form, and that he artificially stopped his empirical search at ten categories. These two mistakes caused him to try and force all things to fit into his scheme, turning it from a scientific endeavor to a dogma.

The lesson to learn is the following: we ought indeed to be attentive to all levels of conceptualization, and we should do this in an open-minded way rather than by applying some rational prejudice. Logicians must seek out *every existing form of proposition*, rather than assume there is one significant form only and search for all its possible subjects and predicates (as Aristotle did). We should investigate the logic of each and every form (including the variety of contents it may house). We should at no time assume our list of forms is complete, but remain open to new discoveries and inventions.

Kant rightly abandoned Aristotle's list, in view of the haphazard way it was accumulated and its lack of a "guiding principle" (other than its declared mission to exhaust all contents of predication). Actually, as we shall see, Kant's proposed list, though in many respects an improvement on Aristotle's, suffered from similar imperfections in other respects. It was less haphazard, but also less empirical. It was more systematically conceived, but also forced things into a preconceived arbitrary scheme.

The following is **Kant's list** of twelve "categories", made up of four groups (called "moments") of three categories each[49], with some explanatory and critical comments by me:

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[49]   Actually, two of the three categories in the last group are not named, but subdivided into two subcategories each.

➢ **Quality = reality, negation, limitation**. I would refer to this group as Polarity, and to its first two members as respectively presence and absence (of some specified thing, entity, character or event); these are contradictories, of course. To use the word "reality" here would not be accurate, since we are in fact on a phenomenological level of consideration. Regarding limitation, this could be defined as "X is present till Y and absent beyond Y" (where X is some thing and Y is some point in space and time). Thus, limitation is effectively a compound of presence and absence; and it involves a notion of space and/or time, subdividing a whole into parts. The categories of Quality play a role in those of inherence and subsistence.

➢ **Quantity = unity, plurality, totality**. Quantity, here, means Number (or Scope). Unity refers to *this* one, i.e. some indicated single (thing); plurality refers to an *unspecified* number of units, i.e. many, more than one (thing); and totality to *all* (things of a certain group). Note that totality (all) may be taken as a special case of plurality (some unspecified number), or as contrary to plurality (if the latter is read as '*only* some'). Totality also presupposes that we have already delimited some group of things. Thus, the categories of Quantity ought to be related to the category of community, if we understand the latter as referring to classification (see below).

➢ **Modality = existence, possibility, necessity**. Modality is aptly named, but existence here should more accurately be called actuality; it means this indicated fact, here and now or there and then (a precise space and time position is specified). Possibility may mean some conditions or *only* some conditions; the latter is called contingency, the former includes necessity as an alternative to contingency. Necessity refers to something that occurs under all conditions. Comparing modality to quantity, we see that the three modalities are special cases of the three quantities, applicable specifically to numbers *of conditions*. Modality is also closely related with Causation.

➢ **Relation = inherence and subsistence, causality and dependence, community**. I suppose that Kant had in mind here categorical, conditional and disjunctive propositions; thus, by Relation he meant the Copula of categorical propositions, or more broadly the Forms of conditional (if-then-) or disjunctive (either-or-) ones. Note that his three categories are defined through five subcategories, here, breaking the desired symmetry somewhat. The first pair of relations is based on the formal notions of subject and predicate; it is thus usually interpreted as referring to 'substance and accident', i.e. to *entities and their properties*. The second pair is interpreted as 'cause and effect'; but note that though *causation* (the kind of causality here apparently intended) is a

compound of conditional propositions, it does not follow that these forms are equivalent; moreover, volition and natural spontaneity do not seem to have been given a place in this scheme. With regard to the last category, 'community', more will be said further on.

Various additional comments are in order.

a.   In sum, Kant here seems to have tried to list the ontological assumptions or implications apparently underlying the various already known logical features of propositions (or "judgments", in his terminology). That is to say, starting from our known forms of discourse, he infers a corresponding list of what they seem to intend, presume or imply *out there in the apparent object*. He consciously interprets logical features, to bring out their ontological significances.

It is therefore surprising that he goes on, after drawing up this list, to overturn its ontological moment, changing it into a sort of mental reformatting of data inputs. The transition seems arbitrary, without intrinsic logic. I refer here to Kant's interpretation these twelve categories as the "forms of the understanding", i.e. as "pure (a priori, non-empirical) concepts" on which our knowledge is based. This requires explanation.

Kant characterized (with typical grandiosity) the above-mentioned transition from features of propositions to facts of reality as "**metaphysical deduction**". It is important to dwell on this phrase, because it tells us a lot

about his thinking. Kant here takes the various logical distinctions developed by Aristotle as his givens, and "*deduces*" from them corresponding facts of reality (referred to by the adjective "metaphysical").[50]

This is, of course, topsy-turvy. Kant can maybe do that, because he has Aristotle's work behind him. But Aristotle had to go the other way, and derive the logic from the reality; he had no doctrinal givens. That is, in truth, no deduction is involved in relating formal logic to reality, but an *induction*. And I would suggest that even Kant and ourselves, coming after Aristotle, need induction to understand all this; we cannot do so by mere deductive means.

Thus, Kant was essentially thinking in the way of a passive, conventional-minded student, whereas Aristotle had to proceed in the way of a creative, original researcher. So it is not surprising that Kant conceived a reverse epistemology, in which the effect becomes the cause and vice versa. That is, it was to be expected that Kant would present the logical categories as determining the metaphysical categories, rather than the reverse. He was just describing his own rather deductive thought process; but this was not a universally applicable

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[50]   This is comparable to Descartes' *cogito ergo sum* (deducing of "I am" from "I think"), or to the St. Anselm's ontological argument (deducing the existence of God from the very idea of Him). Kant no doubt had these examples in mind when he concocted this deduction from the logical to the ontological.

description, since it ignored the more inductive thought processes Aristotle had used before him.[51]

b.   We should of course also note that, though Kant's list is *prima facie* more intellectually interesting and satisfying than Aristotle's, it is **not a list of the same things**. Albeit some similarities in terminology (viz. the use of the words "categories", "quality", "quantity", "relation", "substance"), this list obviously essentially refers to something essentially different. Aristotle's list could be said (forcing it a little) to have concerned, in Kantian terms, only the subdivisions called inherence (subjects) and subsistence (predicates).

Aristotle's list was meant to clarify the possible *contents of propositions*, i.e. the kinds of things we may and do *think about*. Kant's list, on the other hand, was intended as a collection of the possible *logical properties of propositions*, i.e. the various *formal features of our thoughts*.[52] These various factors were not unknown to Aristotle – in fact, it was he who originally discovered and discussed most of them. Thus, Kant was not

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[51]   Kant's theory of the categories involves further complications, such as the "transcendental deduction", the "schemata", and other intricate notions and arguments designed to justify his Copernican revolution. But I will not examine such details further here, other than to say these were attempts at rationalization of unreasonable proposals rather than credible justifications.

[52]   I say "the" various contents or features, here, because both Aristotle and Kant considered their lists complete; but I do not wish to imply that I agree with them (i.e. I would prefer to drop the word "the").

discovering new ideas, but merely drawing attention in a new way to certain already existing ideas.

So, whereas Aristotle had assembled a list of categories *of content*, Kant proposed a list of categories *of form*[53]. Kant (wisely, I think) considered the latter list more worthy of philosophical study; his doctrine was novel only in the emphasis he gave to already known formal characteristics.

We could also say that whereas Aristotle sought to identify *what* we think about, Kant sought to identify *how* we think about them. That is, while Aristotle's list may be regarded as *ontological* information, Kant's list has a more *epistemological* significance (although he misjudged precisely what that was).

Moreover, whereas Aristotle's categories are acquired possessions of ours (albeit almost inevitably acquired, by virtue of their ubiquity), Kant's are averred *forces* innate in us. While Aristotle drew up his list in the way of an empiricist observation of objective phenomena, Kant drew his up in the way of a rationalist prediction of subjective phenomena; i.e. he effectively claimed his categories to be *instincts*, which somehow control our thoughts, out of our control, and he claimed to know this about them by purely "deductive" means.

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[53]   Some (namely, Lesniewski and Carnap) have already noted this difference, calling Aristotle's categories semantic and Kant's categories syntactic.

c.   Note well the above-mentioned interrelations between the three categories under each heading, and those between the headings. The interrelations in each group are clearly **not symmetrical in all respects**. The trouble with system building is that it almost inevitably involves oversimplifications; the natural diversity involved is obscured and accuracy is sacrificed. Kant's attempt to force his list in a numerically symmetrical scheme is a case in point.

(i)   Consider first the polarities. In Aristotle's logic, there are two mutually exclusive and exhaustive polarities, the positive and the negative. Limitation is not in his list. Kant seems to have introduced this third category for the sake of symmetry.

If we consider his proposal, it seems to refer to a quantification of the predicate. When we say X is Y, we mean that X is Y in some respect, without excluding that it might be other than Y in other respects. For example, "Roses are red" does not exclude these same roses from having green leaves or from being wet, soft, etc. One predication does not exclude others. On the other hand, when we say X is not Y, we mean that X is not at all Y in any respect. For this reason, affirmation and denial are mutually exclusive and exhaustive.

To insert limitation here suggests that a third possibility exists, viz. X is partly Y and partly not Y. This possibility does indeed exist, but it is already tacitly covered by the proposition X is Y, as just explained. To

insert limitation seems to imply that X is Y means X is wholly Y – which is never true of anything, except perhaps X is X (provided "is" is here understood as "equals"). Moreover, if we insert limitation, logic requires we insert its opposite, infinity; and if we do that, we must consider infinity both on the positive side and on the negative side. But clearly, all this no longer has anything to do with the polarities of ordinary predication. It is just an attempted analogy gone berserk.

If we were to insist on having a triad, I would suggest as our third category that of *problemacy*, which could be characterized as limitation of certainty. This would allow us to refer to problematic propositions, those involving an uncertainty as to whether X is Y or not Y, or a probability rating favoring the one over the other. When presence and absence is predicated without qualification, certainty is tacitly implied; this is appropriate to a deductive system of logic. But when we consider inductive issues, we need the in-between concept of problemacy (implying intermediate degrees between truth or falsehood, or knowledge of them), as against settled (known) truth or falsehood. Without such a tool, our discourse would be stuck.

However, it might be asked whether this is the appropriate place to mention certainty and problemacy. They are, after all, logical or epistemic (*de dicta*) modalities; so, they should be included under the heading of modality. In that case, the heading of polarity should

only have two categories. On the other hand, if we look upon the heading of modality as essentially concerned with the *de re* modes of modality (the spatial, temporal, natural, and extensional modes), then it would be reasonable to place problemacy here. In either event, Kant's category of limitation should be abandoned. It has more to do with quantity (scope of application) than with quality (i.e. polarity).

(ii)   Consider now the quantities and modalities. They are very analogous sets – not fortuitously, but because quantity is a mode of modality! Quantity refers to extensional modality. Alternatively, quantity is used to define the other modes of modalities. Therefore, the heading of modality in Kant's list should be taken to refer to the natural mode of modality, and eventually the spatial and temporal ones, too; that is, to the remaining *de re* modes. However, it is clear from Kant's references in this context to assertoric, problematic and apodictic propositions that he rather has in mind *de dicta* modality.

In adopting this position, Kant is somewhat influenced by Aristotle, who in his work on modal logic generally refers to *de dicta* modalities. However, in his work on ontology, Aristotle examines *de re* modalities in great detail. Kant does not apparently take these important modes of modality into consideration here. If this is indeed Kant's intention, then he is clearly in error here. This error of his would explain why Kant essentially followed Hume's denial of natural necessity. When Kant

speaks of necessary vs. contingent propositions in the context of the analytic-synthetic dichotomy, he is apparently referring to *de dicta* modalities. At least, mainly so; but perhaps, not exclusively so. It seems that he did not have a distinctive notion of the *de re* modalities.

Another critique of Kant's list of the quantities and modalities is its one-sidedness. Unity, plurality and totality are the positive side of judgments: this one, some (indefinite) plurality of, and all X are Y. But there are the corresponding judgments this X is not Y, some X are not Y, and No X is Y to consider. Similarly, Actuality, possibility and necessity are the positive modalities. But there are parallel negative ones, namely: actuality, possibility and necessity of negation. It is, admittedly, legitimate to consider the negative cases as special applications of the positive ones, since the polarity is attached to the copula rather than to the quantity or modality.

However, it is also true that some people (notably, Hume) do not realize the logical connection between impossibility and necessity, and seek to appeal to the former while denying the latter. Moreover, we need to mention that possibility (the negation of impossibility) and possibility-not (the negation of necessity) can be conjoined, yielding the modal category of contingency. Similarly with regard to quantity. It is therefore justified to consider Kant's lists of quantities and modalities as

consisting of three pairs of categories each. This destroys the symmetry somewhat, but after all his heading of relations comprises three sets of two categories, so this is no big deal.

One more comment regarding symmetry – it could be argued that the positive and negative polarities ("qualities") are included in the quantitative category of unity and the modal category of actuality. In other words, the set of categories called polarity could be viewed as redundant; or alternatively, the negative quantity and modality categories could be viewed as applications of the polarities to the quantities and modalities. In either case, the symmetry Kant sought is again broken. All this is said to point out the artificiality of his list.

(iii)   With regard to the heading of relations, now. It is not at all obvious that this list is complete. Kant is influenced by Aristotle in thinking that the predicative form "X is Y" suffices to express all categorical relations. Aristotle built his list of categories by glossing over important formal differences (because his main goal was to develop his syllogistic theory), and Kant follows his lead in assuming a very limited bestiary.

For instance, just where in Kant's list should *positioning in space and time* be classified? Aristotle treats place and time as predicates; so perhaps Kant thinks so too (although "is in" and "is at" are rather, in my view, relational copulas). Again, where is the process of *comparison* mentioned in Kant? Nowhere, yet

comparative propositions like "X is more Z than Y" are crucial to distinguishing and classifying[54]. Another set of categorical propositions crucial to human knowledge is that dealing with *change* of various kinds. I mean forms like "X gets to be Y" (alteration), "X becomes Y" (radical change), and "X evolves to Y" (evolution). Such propositions are not reducible to predicative ones, or at least not directly. Again, Kant does not classify volition and natural spontaneity in this context[55].

Clearly, categorical propositions are in fact a broad class (or genus) of many different kinds of propositions. The predicative form "X is Y" is just one species of categorical proposition. In fact, there are many more, and we would be hard put to list them all. Kant follows Aristotle in treating the class as ultimately homogeneous; but we cannot really reduce all other categorical forms to this simplest of categorical forms without important losses of meaning.

Kant makes the same mistake with regard to hypothetical propositions. He does not realize that each of the *de dicta* and *de re* modes of modality has its own set of hypothetical forms. He thinks of hypotheticals as solely if–then (logical) propositions, but some are distinctively

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[54]   Note that "more", "less" and "as much" are essentially both relational and quantitative, and they are not part of the predicate.
[55]   As I have already mentioned, the relation of 'causality' here seems to more specifically intend causation, in view of its implicit reference to conditional propositions.

different in intent: "in cases that–then" (extensional), "when–then" (natural), "at times when–then" (temporal) or "in places where–there" (spatial). These different modes cannot be reduced to each other, but must be treated separately if we are to truly reflect human thought. To each corresponds a mode or type of causation.

Moreover, Kant's apparent ontological interpretation of disjunction as "community" seems forced to me. Some commentators explain this as "reciprocity of agent and patient", but I fail to see what that has to do with disjunctive judgment. I would rather see in it the logical ground for *classification* (in the sense that a class is a disjunctive collection of members). Alternatively, disjunction is much used in *inductive* thinking, to list alternative theories or directions. Kant interpreted disjunction the way he did, simply because he could think of no other interpretation.

d.   As we have shown, Kant's errors of enumeration were mostly based on Aristotle's errors of classification. Also, by insisting on a fixed number of twelve categories, Kant was making the same mistake Aristotle had made when insisting on precisely ten categories. He exacerbated this artificial difficulty by his scheme of four groups of three. He painted himself into a corner, making difficult any further development of his list, by himself as well as others. It would have been wiser for him to

declare this heading forever open, allowing mankind to invent or discover new relations.

For if we consider what Kant was trying to do in drawing up this list of categories, it is clear that he missed out on a *fifth* heading, namely: **Logical processes**, comprised of **Deductive arguments**, **Inductive arguments**, and (if we insist on a third category for the sake of symmetry[56]) **Fallacies**, i.e. arbitrary or irrational arguments.

Granting that Kant's list of categories was an attempt, however gauche, to summarize the most basic tools of logic, his list is clearly too short. He has given attention to various *static features* of judgment (polarities, quantities and modalities), but has simply ignored the all-important *dynamics* of judgment, through which we rightly or wrongly justify our beliefs or infer new beliefs from them. I refer here to processes like syllogism, generalization, and the fallacy of accident, to give some obvious examples.

Thus, Kant ought to have listed *fifteen* rather than twelve categories. Note however that deduction and induction are not exactly mutually exclusive, though both refer to

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[56]   I think it is wise to include fallacies as the third category under this heading, because people do not only reason correctly, in the way of induction and deduction, but also very commonly incorrectly. Such erroneous logical processes, or paralogisms, are sometimes intentional perversions of thought, to be sure; but very often they are expressions of ignorance of logic. Under the heading of fallacies I would include any failure to apply any of the laws of inductive or deductive logic.

valid argument as against the invalid logical processes labeled fallacious. Induction may be viewed as the essence of the human method of knowledge; and in that case, deduction should be viewed as one of the tools in the wide array of inductive processes. Alternatively, deduction could be viewed as the essence of logic; and in that case, what distinguishes induction from it is that inductive reasoning yields two or more alternative conclusions, whereas deductive reasoning yields only one conclusion. Thus, these categories are closely related to each other.

It should be added that when I say that induction and deduction are all the means of knowledge available to mankind, I do not mean to exclude at the outset more mystical ways of knowledge, such as prophecy or meditative enlightenment. I do not, either, mean to include them, but only to keep an open mind. The point made here is that since induction includes all possible experiences, as well as use of logic, then if one has such mystical experiences, they would be accepted as new, additional data to be taken into consideration, and to be assimilated as well as one can by logic. There is no conflict in principle between the empirical-rational method and out of the ordinary experiences.

Note also that induction and deduction are *the very means* through which we validate induction and deduction and invalidate fallacious arguments. There is no circularity in saying so, if we keep in mind that these

two methodologies are based on both the laws of thought and experience.

The science of logic as a whole, which attempts to list and justify all the arguments in these two branches, is not validated by an axiomatic system of any sort (the *more geometrico*) but built up from successive experiences and logical insights (i.e. particular instances of the laws of thought). To seek to call upon some other justifications than those is to fail to ask where those in turn would come from, ad infinitum. And one cannot reject logic because of that implied infinity, because this would mean one regards that rejection of infinity as a supreme principle not itself needing justification – which is self-contradictory. Thus, logic is solidly grounded and in no fear of reproof.

6. RATIOCINATIONS

Formal logic (including both its deductive or inductive branches) analyzes and validates all sorts of components and processes of human knowledge (or knowing). Looking at the totality of it, one may get the impression of a static collection of ways and means. But this is only, of course, the finished product, and we cannot claim to really understand logic till we have captured *the many unit rational acts underlying every thought*.

This refers to the smallest building blocks of dynamic thought, which we may call ratiocinations. In formal logic, we usually think of terms, propositions and arguments as units of thought. But in fact such units are far from primary; they are mostly complex constructs, which we may call cogitations, made by various simultaneous and successive ratiocinations.

Ratiocinations and cogitations are of course all judgmental (to use Kant's term), insofar as their truth is

open to doubt or discussion to various degrees (which does not mean that they are necessarily or even usually false), in contrast to pure experience which must be taken as given (i.e. true in principle).

I suspect and suggest that when Kant formulated his theory of "pure forms", the forms of sensibility and forms of understanding, he was trying to identify the rational acts that underlie what on the surface appears to most of us as thought. His distinction between "transcendental logic… which gives an account of the origins of our knowledge as well as its relationship to objects", and "general logic… which abstracts from the conditions under which our knowledge is acquired, and from any relation that knowledge has to objects", seems to point in that direction[57].

This programme of Kant's was very interesting and laudable, although he erred in focusing directly on relatively complex concepts like space and time (which he classed as intuitions) and substance and causation (which he classed as simpler concepts), instead of on the more primitive rational acts which give rise to those concepts. The latter are admittedly close to basic; but since they can (as we shall presently make clear) be reduced to sets of the former, they are not as basic as Kant implied them to be.

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[57]   Here quoting from the aforementioned Wikipedia article, without my necessarily agreeing fully with this terminology or these definitions.

We wish, nevertheless, to implement Kant's good idea in its essence, and look for the true elements or irreducible primaries of reason. What are these 'ratiocinations'? They are, first and foremost, acts of reason or rational acts, from which (in various combinations, in various circumstances) all others are gradually built up. To say that they are *acts* is to mean that they are *acts of will*, volitional acts, voluntary efforts *of the subject* of rational cognition, i.e. the soul, the one who thinks.

Note well, I am not referring like Kant does to some mechanisms or structural determinants that in some mysterious and uncontrollable manner form thought out of sensory impressions (first percepts ordered in space and time, then concepts ordered by the categories); and thus present us, take it or leave it, with a finished product of doubtful logical validity or certainty. Kant's theory of knowledge makes ignorant, stupid and passive marionettes out of us, with no say over our noetic destiny. It is, as already mentioned, a self-contradictory position.

What I am saying is that the subject (i.e. you or me) is *an active agent* in the process of reasoning. It is no accident that reason and volition occur in the same biological entities – they naturally go together; they are mutually dependent faculties. They occur in individual humans in

proportion to each other, because they are essential to each other's functioning[58].

The elements of reason are not cognitive "atoms"; they are not notions, ideas, concepts, and much less propositions or arguments. They are not entities, but the means through which we produce such entities; they are *cognitive events*. And they do not just occur without our participation: they are *thought by us* – they are actions *we* are called on to take to advance in our knowledge of the world by way of reason.

'Conception' refers to the act of conceiving, i.e. to the cognition of abstract relations (notably those of similarity or difference). This concept is formed by analogy and contrast to that of 'perception', which is cognition of concrete phenomena (and to 'intuition', which concerns non-phenomenal concretes). Abstracts relate concretes to each other but are not phenomenal or concrete objects themselves.

Conceptual insight (which in a broadened sense includes logical insights of compatibility or incompatibility) is something indeed mysterious (a 'seeing' without eyes and whose objects are invisible). It is the miraculous human capacity for understanding, our distinctive act of intelligence.

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[58]   Higher animals may well have some (more limited or just different) rational and volitional powers too; if they do, or to the extent that they do (for I do believe they do), these powers are likewise necessarily proportional to each other.

Before any verbalization in terms of common nouns is possible or meaningful, some sort of conception is necessary. For this reason, any attempt to deny the validity of conceptual knowledge as such is absurd. It is itself conceptual, so it cannot logically deny conception as such. Thus, conception as such (though not necessarily every conception) is necessarily valid.

Whereas Kant told us what he regarded as conditions of perceptions, I would here like to stress the conditions of conception. These include an intelligent Subject, with the power of volition, able to build concepts out of percepts. Reason is impossible without volition. Volition is needed to wonder, to ponder, to intend, to research, to check results, to logically evaluate hypotheses, to change one's opinion, and so forth. These are not functions that any machine-like entity can perform, but only someone with free will.

It is true that the effort involved in our simplest acts of reason is not always apparent. That is to say, much of our reasoning goes on subconsciously, indeed (for all intents and purposes) unconsciously. This might seem to confirm Kant's essentially mechanistic position. The brain does seemingly continuously feed our minds with thoughts of all kinds, whether we like it or not. And if any effort is involved, it is rather the effort needed to stop thought – a far from easy feat. Are such thoughts "ours" in any meaningful sense? Are we just passive observers of them, or intelligent doers of them?

However, we can still profess and insist that thought is essentially volitional, by pointing out how simple, easy and quick the elementary rational acts are bound to be, and how they can become reflex and habitual and so almost invisible to us. Consciousness does not always imply self-consciousness, or consciousness of all aspects of a situation. We only become aware of our rational acts when they reach a certain level of complexity, difficulty and cumbersomeness, i.e. when an unusual, more conscious effort of thought is required of us. It is thus quite reasonable to claim that no thought is at all possible without some "presence of mind" (more precisely stated: "presence of spirit"), however minimal (or subliminal) it be[59].

This affirmation becomes all the more credible when we consider what specific acts might be listed under the heading of ratiocination. Certainly not all of Kant's pure forms, although some of them might fit the bill. Two approaches are possible to answer our question. (a) We can proactively observe the rational acts through which we gradually build up our terms, propositions and arguments, even as we do them, or (b) we can retroactively analyze the genesis of our thoughts into the simpler components to which they are reducible.

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[59]   I discuss various so-called *involuntary* acts of volition throughout my work *Volition and Allied Causal Concepts*, always postulating a minimum level of consciousness for them, since they are considered acts of volition, and all will is freewill. "Involuntary" in such contexts does not mean literally "non-volitional" but more mildly *almost* so.

However, as we do so, it becomes obvious that we cannot dichotomize all thought into simple and complex, or ratiocination and its products. It becomes obvious that there are in fact many gradations between the simplest, irreducible rational acts and the most complex static products of these. When I first proposed a concept of ratiocination some years ago, I had in mind certain very simple rational acts; but the analytic listing below (incomplete though it be) shows that the concept must be expanded somewhat.

Some rational acts are primitive (elementary, irreducible), but others (equally important) are composed of two or more simpler rational acts. More precisely still: composite rational acts are not merely the simultaneity or succession of two primitive acts, but a combination of acts such that the second one performed depends on the results of the first one performed. It is difficult to label such an act primary, since it includes another primitive act; but on the other hand, it is difficult to label it secondary, since it adds something new to the preceding. The word ratiocination should therefore not be taken too rigidly, and range across simple to more complex rational acts.

Moreover, I do not here propose a precise and comprehensive list of ratiocinations, but only make suggestions of some possible candidates for the job, in the way of illustrations. We do not have to have a fixed list, but may engage in an ongoing research project, using

open-minded trial and error as our method. The answer to our question is not some dogmatic neat doctrine, but a heuristic and flexible way. We do not want to fall into the trap set by Aristotle and Kant of a finite number of specified units, or of an artificially symmetrical scheme. We may propose candidates cautiously, tentatively and reversibly; we may proceed uncertainly and change our minds. We do not have to claim omniscience in such a delicate and crucial matter.

The following, then, is a brief, non-exhaustive survey of how we acquire knowledge, with reference to some of the most important rational acts or ratiocinations:

➢ Observation of the presence of something and its consequent *affirmation*. This is clearly a simple, primary act of reason, an acknowledgment of experience in accord with the law of identity.

➢ Observation of the absence of something and its consequent *denial*. This act is not quite primary, because we must first think of some sought for presence and look for it (far and wide) and not find it (thus far). It is thus an inductive activity (and so open to later revision), rather than a simple act, and it refers to the second and third laws of thought as well as the first.

➢ Observation is essentially a passive act, although one may observe the results of more active interventions (whether directed at the object or at

the subject), called *experiments*. These, whether physical or mental, are also rational acts.

➢ Mentally (or more precisely, spiritually) *intending* things, and physically *pointing* at them. These rational acts serve to tell ourselves (and each other, eventually[60]) what we mean to refer to during subsequent rational acts.

➢ *Distinguishing* and isolating one thing in the field of experience from others, or subdividing one thing into two or more things. This is done by mental projection, and involves imaginary drawing of boundaries, so that some aspects of the whole are considered as one thing while other aspects are considered as other thing(s).

➢ Making *comparisons and contrasts* of measure or degree. This involves observations of similarity and dissimilarity between things in the same field of experience or in different fields. Comparison is positive, and therefore more direct; contrast is negative, and therefore requires more processing.

➢ On the basis of the preceding activities, we *abstract* aspects of things from things, and then

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[60]   Note that while *one's own* "pointing" is an intention that we know intuitively, *someone else's* "pointing" is ultimately understood by inductive means, i.e. by hypothesizing what might be intended and eliminating erroneous hypotheses, with reference to the enduring or repetition of such pointing in a changing context.

group together things that are similar and separately things that are dissimilar. Note that negation is an important aspect of abstraction.

➤ Abstraction is a crucial aspect of concept formation or conceptualization. Abstraction allows us to engage in *classification*, collecting distinct and similar things together; then developing hierarchies and orders of classes. Note that classification involves both integration and differentiation; including some things in a class implies excluding others from it[61].

➤ After initially grouping some things together in a class, we may add on more cases, or remove some instances. These are the intentional processes of *inclusion* and *exclusion*. Such changes in subsumption are based at first on apparent similarities and differences between new and old instances.

➤ Eventually, efforts may be made to explicitly *define* the common and distinctive character(s)

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[61]   The only classes that include everything are terms like "thing", in the sense of existent or real. Their contradictories (non-thing, etc.) are necessarily *merely verbal* fictions, i.e. essentially empty classes, in which we dump figments of our imagination that we cannot include. On this basis, we have a broader term "thing" that includes both things and non-things in the preceding sense. The value of such a broader term is that it allows us to name things that we are not yet certain about either way. That is, it has inductive value as a temporary way-station.

between things classed together. Sometimes definition is immediate and fixed; but usually it is gradual, tentative and adaptive. A definition may at first be vague, then become more precise.

➢ *Naming* a particular, or a concept that one has constructed (as above), is also a rational act. Such verbalization is not always necessary, but usually useful.

➢ Measurement, of course, depends on number, especially as it gets more accurate. This depends on *counting*, starting with one then two or more successively. Note that the unit is formed by distinguishing (as above detailed); some grouping may be needed; numbers greater than one depend on reiteration of addition of one.

➢ Also involved in measurement is the *comparison and contrast of numbers* (equal or unequal, i.e. greater or smaller). The numbers refer to entities (e.g. people or commensurable portions of a line) or to qualities (e.g. degrees of a color or speed of movement). The numbers involved may be the same, or considered approximately so; or they may different, or different enough to constitute a negation.

➢ Numbers also make possible *statistics*, from which we develop frequency concepts like all, some, none, few, most, through which we define

the quantity and other types of modality of propositions.

➢ *Proposing* (i.e. formulating a proposition) categorically, then conditionally or disjunctively, are obviously complex rational acts, since they depend on many of the previously mentioned simpler acts being performed first (i.e. a proposition involves many concepts).

➢ Propositions are initially singular and actual, and thus by implication particular and possible. We try to *generalize* them as far as possible, and have to *particularize* them as much as necessary. These are crucial rational acts, depending on the laws of thought and the principle of induction, and on numerical concepts.

➢ *Asking questions and looking for answers* are rational acts, which help us advance in our conceptualizations and formulations of propositions. We make suggestions or speculations in reply, which we then must test before we can adopt or reject them.

➢ *Theorizing* involves not only forming concepts and propositions, but also interrelating them together and with experience by means of various arguments. Theories may consist of one proposition or large and intricate conjunctions of propositions. What most distinguishes theorizing

from mere proposing, however, is the *invention of new terms*, i.e. the use of imagination.

➢ Frequently, we move from one abstraction to another by way of (rough or precise) *analogy*, using one conjunction of characters to construct another. This involves *imagination*, the power of reshuffling mental data at will.

➢ An important aspect of theorizing is the search for causes, whether in the epistemic sense of reasons (attempted explanations, premises or items of evidence), or in the more ontological senses of causatives, volitional agents or influences of various sorts. For knowledge of causes in any of these many senses is the main source of our *understanding.*

➢ Theories are always in flux, being constructed, modified or dismantled. If they fit in with the totality of experience and logical considerations they may be adopted; if they don't they are rejected or at least made to adapt. This is the inductive process of *adduction*, which involves complex rules of comparison and contrast between competing hypotheses.

➢ *Arguing*, from premises to conclusions, using inductive and deductive logical processes, like adduction or syllogism, is used to justify and clarify. Arguments are still more complex rational

acts, dependent on previously formed concepts and propositions.

➢ Arguments, and indeed the various rational acts preceding and succeeding them, refer to *the laws of thought and the principle of induction*. This means acknowledging appearances, looking for contradictions between them, looking for solutions to problems, judging truth and falsehood, estimating probabilities.

➢ *Logic* may be exercised ad hoc, without using theoretical knowledge of logic, or may be applied with reference to logic theory previously developed or studied. Every insight or act of logic is of course a rational act. A movement of thought not disciplined by logic is irrational.

The above list shows many of the main rational acts involved in everyday reasoning. It is clear that the acts here listed are all deeply involved in the formation of concepts, propositions and arguments of all kinds. It is also clear that there are both inductive and deductive movements of thought in most of these various acts.

Note that some ratiocination is pre-conceptual and pre-verbal treatment of experiential data. It is distinctively aimed at perceived particulars, rather than at conceived universals. Such ratiocination prepares the ground for further thought - thought of a more conceptual variety. The latter is also composed of ratiocinations; for

instance, naming is a distinct rational act, one of the many components of verbal thought.

If we analyze our rational acts closely, we find them all to be *intelligent responses to the way things appear to us*. Through them, we use given experiences to form concepts of varying complexity (for example, causation cannot be understood or known in a given case without first grasping and using affirmation, negation, classification, statistics and conditioning).

These constructs are not necessarily true in a given case, because the more complex they get the more they involve inductive assumptions (for example, assuming some negation by generalization). Nevertheless, the simplest ones are pretty reliable because of the narrow limits of their assumptions.

Some ratiocination involves direct insight, i.e. it refers to evidence given in experience alone (e.g. affirming, on the basis of observation of presence). Some, however, is more indirect, involving some reasoning (e.g. denying, on the basis of non-observation of presence). Thus, on the whole, ratiocination appeals to *both* experience and logic, and not merely to the one or the other.

It is clear from our list that ratiocinations are necessarily volitional at some level, in conscious accord with the laws of thought. We can do them, or abstain from doing them. We can do them conscientiously and correctly; or we can fudge them, and err. We retain the capacity to think irrationally, i.e. to misuse our powers of judgment.

Purely mechanical acts (such as Kant conceived for us) cannot yield valid judgments, for validity is a value judgment presupposing freedom of action and of choice. Machines or computers may of course be programmed to do as we will them to, but in such cases it is still our judgments that are evaluated, not theirs.

Since ratiocinations, and thence all thought processes, are acts of the Subject, and the Subject is a non-phenomenal entity known only through intuition, *they cannot readily be pointed out in phenomenal terms*. We can perceive their phenomenal products in us, but the productive acts themselves can only be apperceived, i.e. known introspectively by each one of us. For this reason, it is rather difficult to pin them down publicly. We can say that they occur, but we cannot describe them in terms of something more concretely manifest than our self-knowledge. That is no doubt why many logicians tend to ignore this important field of logic. Ratiocination is too insubstantial and psychological for their liking. They prefer to dwell on more solid and verbal objects of study.

None of this material is very new within my own works, or in general. What is being emphasized here is the need to be aware of all the little rational acts that underlie the larger, more commonly studied, movements of thought. A lot of work might be done by future logicians, to expand on this list and describe the acts involved more precisely, but we shall rest content with the present illustration. A more systematic study would ideally

involve traversing the whole of formal logic in detail and noting the exact ratiocinations underlying each item in it. This field of logic could be called descriptive or generative (as against formal) logic[62].

Logic is mostly dished out to people like a menu, and a menu is of course no substitute for cooking and eating. The traditional rather static presentation is inevitable, as logic is a verbal educational tool; but we must try to keep in mind and somehow bring to the fore the more dynamic aspects, if we wish to give a true picture of logic. That is, how logic is "cooked up" by logicians and how it is "eaten up" by those who study it.

Conclusions. Some of the items we have listed are comparable to Kant's categories. For instances, the first and second ratiocinations, viz. affirmation and denial, obviously correspond to Kant's first two categories. The ratiocinations concerning numbers are related to Kant's category of quantity. The ratiocination of proposing (which is, note well, dependent on other acts) can be assimilated to Kant's categories of relation. Nevertheless, the two approaches are clearly different. Kant's categories are on the whole not as basic constituents of human knowledge as the ratiocinations are.

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[62]   Or perhaps psycho-epistemology (borrowing the term Ayn Rand coined for another purpose).

There is a complex scale of gradation and interplay of mutual dependencies between most of our basic concepts. Some can surely be considered as direct outcomes of primary acts of reason. But others are complex products of many and varied such ratiocinations. It would be a gross simplification to lump all basic concepts together as equal "categories", let alone assign them special powers of control over our thinking, as Kant attempted. There is no basis for considering our faculties of cognition as machine-like entities, which – using some arbitrary, possibly crazy "logic" of their own or programmed into them by nature – could well distort our experiences.

Space and time are, like substance and causation, rather basic *concepts*, which we form in quite ordinary ways by abstractions from experience. It is because we find the phenomena we experience (be they seemingly physical or mental) are extended, are changing, are seemingly constant in the midst of other changes, and are regularly conjoined and disjoined, that we form such concepts. Let us keep the horse before the cart. These concepts do not tell *us* what to think out of the blue – we make *them* what they are in accord with the way things seem to us in experience and in logic. They are tools of ours; we are not their playthings.

Furthermore, conception has many levels or degrees. At the lowest or notional level, it is produced by wordless rational acts, for instance just noticing that two things are

distinctly alike in some respect and mentally classing them together on that basis. More precise measurement of the similarity may be sought. It may be decided that the items are worth not only grouping together, but also naming. Once the concept is named, it may become the object of detailed discussions. At an advanced stage, it may be more and more studied and complex theories about it may be formed.

Thus, we should not confuse the humble uses of the *wordless concepts* of space and time in particular acts of reasoning, with the grand *intellectual abstractions* and debates of physicists and philosophers about them. Similarly with regard to many of the categories. An ordinary person can properly identify a causal relation without being able to discourse on the ontological and epistemological basis of causality. If we do not keep this distinction of conceptual level in mind, we are likely to get confused about the order of things in knowledge. Kant tended to blur it.

To conclude the present essay, although Kant has been an extremely impressive and influential philosopher in the modern Western tradition, his description and critique of reason are far from credible and ought not to be taken so seriously. He was clearly in no position to criticize reason, because he evidently neither sufficiently understood its workings nor had the logical tools needed for such a task, lacking especially knowledge of the logic of paradox and that of induction.

7.   HOW NUMBERS ARISE

If we pay attention to the *ratiocinative acts at the foundations of mathematics*[63], we notice the following intentions or mental movements:

First, there is the mental ***isolation*** of something from its immediate experiential context, intending "this *and not the rest of it*". A part of present experience is focused on, mentally delimited and considered virtually apart from the other parts of present experience. This makes possible the formation of the mathematical concept of '**one**' (symbolized by a '**1**'), which is the elementary unit at the basis of all subsequent rational activities of computation or calculation.

Second, there is the mental ***conjunction*** of a selection of two (or more) such units, intending "this *and* that (or those)". The units concerned may all be present in

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[63]   See also my earlier comments on this topic, in *Phenomenology* (II.4 and VIII) and in *Ruminations* (9.10).

current experience, or some or all of them may have to be brought to mind by memory. This is the basis of the mathematical concept of 'addition' (symbolized by a '+'), which gives rise to compounds of units, i.e. natural numbers greater than 'one' (viz. 'two', 'three', etc.).

Third, there is the mental *identification* of two (or more) such selected units, intending or declaring them to be 'effectively the same', 'numerically equivalent', 'quantitatively equal' (this being symbolized by the '=' sign). Equivalence or equality between two items means that either item can in practice be *substituted* for the other with regard to numerical value or quantity, even though symbolically they may be differently constituted (e.g. as two ones and one two)[64].

Thus, first comes the idea of "1".

From this, we build up the series of natural numbers, two, three, etc., by a succession of additions and equations, each of which relies on the preceding, ad infinitum: 1=1; 2=1+1; 3=2+1; 4=3+1; … etc. This gradual and infinite construction is enshrined and recalled in the process of *counting*: 1, (+1=) 2, (+1=) 3, (…) 4, (…) 5, 6, 7, … etc.

These definitions allow us to work out simple arithmetical inferences or proofs, by way of various appropriate substitutions. For example: 2+2 = 4 is

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[64]   And of course, even though, the things we may have in mind behind the figures, e.g. apples and oranges, may be different in various respects.

derived from $2+2 = 2+(1+1) = (2+1)+1 = 3+1 = 4$. The brackets '( )'are here used to signify our changing mental focus on the numbers involved.

We are now able to invent a fourth useful mathematical operation, viz. *subtraction*. This formalizes the idea of mental **exclusion** of some unit(s) from a set of units under consideration. Thus, for example: having two things, removing one, leaves one; this is symbolized (using the 'minus' sign, written '–') as $2–1=1$. Similarly: $3–1=2$; $4–1=3$; and so forth (compare to the series of additions and their derivatives).

A special application of this idea of mental removal yields our concept of '**zero**' (symbol '0'). "Given just one thing under consideration, if we remove this one thing, what are we left with?" The answer we give to this question is "zero", which construct we interpret as the **negation** of all other numerical concepts. That is, we intend by this 'number' an absence of any unit or collection of units (and later even of fractions of units, etc.); this is how we define zero.

In the same manner, the operations of 'multiplication' and then 'division' can be introduced, and mathematics as we know it can be gradually built up.

All this is simple and straightforward enough, and generally well known. Granting this obvious account, our next question has to be: "is mathematics, then, something 'subjective' or 'objective'?" That is, what is the *ontological status* of numbers?

Historically, mathematics no doubt stems from the material experiences and needs of humans. We can well imagine how necessary economic activities like *isolating* a cow from a herd[65], or *gathering* cattle in a pen, or *exchanging* a cow for some sheep, would in time (as life increased in complexity) give rise to the more abstract ideas of mathematics described above.

Raw experience is evidently non-numerical. It is just a whole, without parts. Nature itself is continuous. It is we, who experience it, who mentally cut the whole into parts, which we mentally regroup in various ways[66]. We do not, however, engage in such acts randomly and arbitrarily, but (more or less) intelligently and rationally.

Without humans (or beings with similar cognitive and volitional powers), *there would be no numbers*, since the unity of all things would never be put in question. It takes humans to discriminate between various aspects of the variegated whole, and thus distinguish ones within a background of many, and so forth.

But this construction of number is neither entirely objective nor entirely subjective. That is, it is not given in experience in the way of raw data, but it *still relies on experience* for its formation. Thus, mathematics is not a mere convention, but a mental organization of data in accordance with its observable features.

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[65]   To eat it, or give it or trade it.

[66]   When I say mentally, I mean by projecting divisions and groupings; i.e. imagination or even hallucination is used.

That is to say: without humans (or the like), events like "one plus one equals two" would not actually arise in the world; yet humans cannot say "one plus one equals three" without thereby contradicting their experience. Thus, mathematics is a product of the experience and understanding of human beings, and not some wild fantasy of theirs.

I submit that the above presentation of numbers theory is an accurate account of how numbers actually arise in the minds of individuals, and how they actually arose in the course of human history. It is not intended as a mathematician's description of events, or a psychologist's, but as an epistemological account. The latter is more fundamental, and fits numerical concepts in with non-numerical ones in the wider theory of knowledge.

Some comments on "modern maths". I say this of course with "mathematical logic" in mind. In modern times, starting in the 19th Century, attempts were made to logically streamline arithmetic, better explain it and fit it in the larger context of our knowledge. This is naturally a worthy undertaking, but some erroneous presuppositions were made in the course of it and some unjustifiable inferences were drawn from some of the results obtained.

We may here mention, as a major example, the work of **Gottlob Frege**[67]. His goal was to make more explicit all the logical steps involved in the development of arithmetic. But in pursuing this commendable goal, he thought he was engaged in purely formal and deductive acts, and did not realize the extent to which he was actually depending on experience and conceptual insight.

This is evident for example in the way he developed cardinal numbers, defining them by reference to disjunctions of members of a set (if I am not mistaken). A set with one disjunction would have two members, one with two disjunctions would have three members, and so forth. Now, this is ingenious, and seems to reduce numerical development to a series of purely logical statements, relying only on abstract concepts like identity and difference, sets and members, and disjunction (i.e. negation of conjunction).

But we can ask many questions. First, does this way of presenting things correspond to the way humans actually conceptualize numbers, as individuals and collectively in history? The answer is, I suggest, no. Frege's system may well be interesting to logicians and mathematicians as an abstract ex post facto ordering of mathematical knowledge acquired till then, and as a way to develop

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[67]   Germany, 1848-1925. Though Frege did not himself draw any larger philosophical conclusions from his results, his contemporary Bertrand Russell did so.

new mathematical knowledge, but it is essentially an artificial and recent construction.

It is more an abstract game than a description of how human knowledge of numbers occurs in practice. Such a construct cannot be said to radically discredit and displace the arithmetic notions that precede it. This would be committing the genetic fallacy, i.e. forgetting the debt owed to what came before in the human mind. It is only because we have already assimilated numbers that we are now able to play around with them the way Frege does.

Secondly, to fully understand this, and agree with it, consider when, where and how the concepts Frege uses in his system arise. It is a misrepresentation to think that he is functioning on some entirely abstract and mechanical plane, without appeal to experience or inductive reasoning. Does he anywhere reflect on how we have knowledge of identity and difference, sets and members, and disjunction (i.e. negation of conjunction), in specific situations and in general?

If we do reflect on these issues, a bit more deeply than Frege ever did, we quickly realize that these concepts are not so simple and primary. Identity and difference involve the cognitive acts of comparison and contrast, which rely on experience and on its subdivision. This indeed occurs before the number one (1) is first grasped, as above mentioned; but the point made here is that it is not as instantaneous and mechanical as Frege imagines.

The concepts of sets and members, and even that of negation, are effectively taken by him as primaries, whereas they require much, much study and reflection to understand and use. It is true that children routinely grasp them enough to use them, but that only goes to show the native intelligence of the human species. In truth, if we want to "formalize" their thinking in the way Frege tries, we have to first clarify the genesis of such abstractions in detail.

Why, for instance, refer to disjunction, when conjunction precedes it in knowledge? We only understand disjunction by negation of conjunction. So to explain numbers through conjunction as above proposed, is the more natural way – and this is the way real humans proceed. I do not pretend to be a mathematician, but I feel safe in saying that a mathematical system based on natural numbers developed by successive conjunction of units is just as good, if not better than Frege's contraption.

It does not follow from such reflections that mathematics is something psychological, i.e. that we need to study psychology to get to mathematics, or anything of the sort. What it does mean is that if you study "mathematical logic" without asking and answering the deeper epistemological questions, all you will have is an abstract construct.

You should not, thereafter, boast to have done away with or replaced epistemology; all you have done is ignored it.

You have flexed your muscles in manipulation of symbols, but you have not demonstrated insight into how you actually functioned while doing so. Your "proofs" are then just superficial processes, which do not take into account every assumption hidden within them.

This is not intended to mean that so-called mathematical logic is not objective, i.e. is necessarily divorced from reality in some significant way. What it is intended to mean is that such studies occur in a sandbox, without proper awareness of the wider world.

8.   GEOMETRICAL LOGIC

It is worth briefly investigating reasoning with propositions we might call 'geometrical'[68], which compare the relative positions in space of two geometrical items (points, lines, surfaces or volumes) X and Y. This refers principally to the following set of forms, which are commonly used in discourse:

'**X is *in* Y**', '**X is *out of* Y**', or '**X is *partly in and partly out of* Y**'.

These forms are implicit in Euler diagrams, which are often used by logicians to clarify and resolve syllogistic issues. For example, the syllogism 'X is Y and Y is Z, therefore X is Z' is read as 'X is in Y and Y is in Z, therefore X is in Z'. In such cases, predication is

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[68]   I had the idea of developing this topic following a debate with Plamen Gradinarov in one of his Internet sites relating to Indian logic.

interpreted as subsumption, or membership in a class, and the geometrical analogy is then obvious.

Deductive features. With regard to their logical *oppositions*, the said three forms are evidently contrary to each other. The 'in' form is here intended to mean 'wholly inside'; the 'out of' form, 'wholly outside'; and the 'partly inside or outside' form is intended to cover cases in between. It follows that if we use the indefinite form 'X is (at least) partly in Y', we mean the disjunction 'X is either wholly in or only partly in Y'; and similarly for 'X is (at least) partly out of Y'.

Thus, '*not* (wholly) in' here would mean 'either only partly in or wholly out of'; '*not* (wholly) out of' would mean 'only partly out of or wholly in'; and '*not* partly in and *not* partly out of' would be understood as 'either wholly in or wholly out of'. It follows from these oppositions that we can educe the negative forms 'X is not outside Y' and 'X is not partly in and not partly out of Y' from the positive form 'X is inside Y'; and similarly in the other cases.

Note that such propositions cannot be 'permuted' at will. That is to say, just because we have verbalized the relation concerned with two or more words like 'is in' or 'is out of', it does not follow that we can freely separate these words from each other, treating one as the effective copula and the rest as part of the predicate. For instance, we treat 'X is in {Y}' as logically equivalent in all

respects to 'X is {in Y}' – for to do so may lead to errors of reasoning[69].

As regards *syllogism* involving these six forms (the three positives and three negatives), we would simply refer back to Aristotelian methods and findings – i.e. consider all possible moods within three (or four) figures, and determine which are valid and which are not. I won't bother doing this here systematically, but leave the job to the reader as an exercise.

Suffices here to give just a couple of examples. The example given earlier, viz. 'X is in Y and Y is in Z, therefore X is in Z', is the most obvious case, suggesting a circle X, within a larger (or equal) circle Y, within a larger (or equal) circle Z. A more interesting example would be the following:

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[69]   See my work *Future Logic*, chapter 45. Note that we sometimes do verbally permute geometrical propositions. For example, 'the worm went underground' fuses the words 'under' and 'the ground' as if they formed a predicate, although the spatial relation of 'under' is formally more precisely tied of the copula 'went'. This is more obvious if we contrast 'the worm is aboveground' – if the expressions 'under' and 'above' were indeed inextricably tied to the word 'ground', we would not realize that they are two relations the same worm might have to the same ground. Or indeed we might forget the third possible such relation, viz. 'partly above, partly below' the ground. In any case, we would miss out on syllogistic reasoning specific to geometrical propositions – for example: the premises 'X is {in Y} and Y is {in Z}' would yield no conclusion, since they lack a common middle term (i.e. 'Y' is not logically identical with 'in Y').

Y is wholly in Z (major premise),

and X is only partly in Y (minor premise);

therefore, X is either wholly in or only partly in Z (valid conclusion).
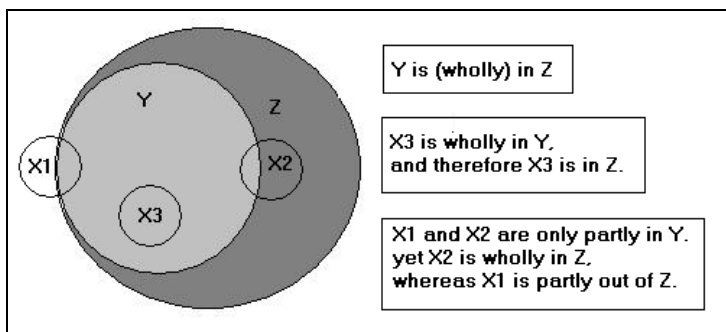
A syllogism with geometrical propositions.

These arguments can be illustrated as in the above diagram (where X3 represents the first syllogism's minor term, while X2 and X1 the two conceivable values of the minor term in the second syllogism). Note that while such an Euler diagram traditionally presents the intersecting domains as circles, we should not take this literally – *they might have any shape or even be physically scattered*, so long as the relevant intersection(s) apply.[70]

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[70]   With regard to methodology, it should be stressed here that logical issues cannot be credibly settled by only proposing concrete examples (as some amateur logicians are

The account here given of geometrical propositions and arguments does not, of course, cover the whole field of geometrical logic. Other commonly used forms may be mentioned, many of which are compounds involving the above forms. We may, for instance mention the forms 'X is close to Y' or ' X is far from Y' (both of which imply X is outside Y). A special case of adjacency would be: 'X is contiguous to Y' (meaning the boundaries of X and Y are in contact at some point(s) of their boundaries). Such propositions may of course appear in combination with the others in mixed-form syllogisms.

Comparative propositions, like 'X is bigger than Y', 'X is smaller than Y', 'X is equal in size to Y', etc. are also to be classed as geometrical forms. So are propositions signifying sequence, like 'X is before Y', 'X is after Y', 'X is simultaneous to Y', etc. Other common forms: 'next to', 'on top of', 'under', 'east of', 'west of', etc. indicate relative directions. The point made here is that

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wont to do). Particular premises may *seem* to yield a categorical conclusion, because that 'conclusion' happens to be true in that particular case (independently of the reasoning process), although in fact – when we consider the issue more formally – there may be two or more possible conclusions. For instance, "the box is on the truck and the truck is in the garage, therefore the box is in the garage" might superficially seem correct (because in some cases it happens to be so) – but in fact the correct conclusion is "the box is at least partly in the garage, but it may be partly out" (for the box may be much longer than the truck). On the other hand, of course, a single concrete case may on occasion suffice to invalidate a proposed form.

the whole field of geometry (as a branch of mathematics and eventually of physics[71]) has a parallel in formal logic, which focuses on the specifically *discursive aspect* of geometrical thought – and this may be called geometrical logic.

Inductive aspects. When the conclusion of an argument is uncertain, in the sense that we have a disjunction of two (or more) possible categorical conclusions as our valid formal inference (as in the second example of geometrical syllogism, illustrated above), the syllogism is still quite *informative*, in that while there is indeed more than one conceivable result, many other theses are thereby formally excluded (e.g. the conclusion 'X is wholly in Z' [as shown for X3] is excluded from the premises 'X is only partly in Y and Y is wholly in Z'), i.e. rendered logically inconceivable.

Another point worth making with regard to such alternative conclusions is that they may not have the same *degree of probability*. If the situation in our above

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[71]   Geometry deals with mathematical abstractions, which do not necessarily have obvious material expression. For example, if we say 'the planet Earth is in the Solar System', we do not mean that the Solar System has a visible physical boundary. We would rather think of its boundary as being the outer limits of the gravitational pull of the Sun and the planets and other bodies close to it (versus the pull of other eventual bodies in the same galaxy) – beyond which a body would travel off unhindered. That effective boundary may of course be variable as conditions change.

second example is exactly as described by our Euler diagram (although, to repeat, this illustration is only one possible visual interpretation), then the outcome labeled X2 would seem more probable than the one labeled X1. Clearly, there are many more places around the circumference of Y where X2 might lie; in comparison, X1 has a very limited scope. In that case, we could say that the conclusion of the premises 'X is only partly in Y and Y is wholly in Z' is most probably 'X (i.e. X2) is wholly in Z' and less probably 'X (i.e. X1) is only partly in Z').

Note this last comment well, because it relates to the interface between deduction and induction. One way to define the distinction between these two types of inference is to regard single conclusions as deductive and multiple possible conclusions (especially when their relative probabilities have been worked out) as inductive arguments; in that perspective, deduction is the limiting case of induction, when the probability of a certain conclusion is one hundred percent. We could alternatively view such disjunctive formal conclusions to some syllogisms as being as 'deductive' as categorical conclusions; but in that case, the expression 'deductive' simply corresponds to what we mean by 'inference'.

These two viewpoints can be reconciled if we understand the difference between focusing on the inferred disjunctive proposition as a whole, which is forcefully 'deduced', and focusing on the individual disjuncts

composing it, which may eventually be variously 'induced' in accord with of their relative probabilities (which, note well, require further argumentation to establish).

When the disjuncts are ordered by their respective probabilities, it means that the most probable disjunct is our first choice as conclusion. If this choice turns out to be belied by other considerations (i.e. by further experience or other, more reliable conceptual inferences), then we opt for the second most probable disjunction. If the latter is also eliminated, we go for the third, and so forth, till (if ever) we are left with only one option. This is of course the process of *adduction* – where, faced with more than one solution to a problem, we opt for the most credible solution, but may gradually be driven (by the concrete evidence or abstract issues) to prefer initially less obvious solutions.[72]

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[72]   To give a specific traditional example: suppose I see something that resembles phenomena I have in the past labeled "smoke". I cannot immediately call it smoke without risking error. Before I apply the same label to my new visual experience, I have to diligently ensure it fits in the conditions of applicability previously established (or I may have to adapt those conditions). Thus, I would want to sniff and find out if what I have just seen not only looks like smoke but smells like smoke. If I cannot be sure that the smell came from the same source as the sight, I may have to test the matter further by looking for an underlying fire. Better still (since smoke is not always accompanied by visible flames or tangible heat), I may chemically analyze the phenomenon. If it turns out to consist of H_2O, for instance, I would conclude it to be not smoke but mist. If on the other hand the chemical composition is found to

But note too that in some cases even the least probable option may eventually be found (empirically or otherwise) wanting! In such a case, we would have to backtrack through our chain of reasoning to find out exactly which assumption we made earlier needs to be *revised* so as to recover a logical situation. For it is logically unacceptable that *all* the valid alternative inferences from true premises be found false. If the consequent of an antecedent is certainly false, the antecedent cannot be entirely true but must contain some error.

Note here that, in view of the possibility of erroneous premises in deduction (whether the conclusions ultimately be found true or false), deduction is much more tentative than it seems at first sight. In that sense, deduction ought to be viewed as one tool in the toolbox of induction (together with observation, generalization and particularization, adduction, and so forth). Even the results of direct applications of the laws of thought are ultimately inductive, in the sense that the empirical or

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be consistent with the composition previously established for smoke, I can at last with reasonable probability conclude that what I saw was smoke (unless or until some further objection is proposed). This is the process of adduction in observation, classification and naming: gradually eliminating alternative interpretations of an initial observation by means of additional observations and arguments; narrowing down the possibilities until we can attain reasonable certainty.

conceptual data the laws are applied to are products of prior induction.[73]

Since deduction is impossible without some given information from which further information might be deduced, all knowledge is ultimately inductive. All knowledge requires some sort of experiential input (whether sensory, mental or intuitive) from somewhere or other to take shape. Deductive logic is simply the ordering of such knowledge with reference to the laws of thought (identity, non-contradiction and excluding the middle).[74] These comments are in no way intended to devaluate deduction. We can point out, conversely, that induction beyond plain observation is impossible without

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[73]   I am here referring to arguments showing up a self-contradiction in some idea or thesis; for example: it is self-contradictory to say "all knowledge is false". The point made here is that, in the latter example, we depend on understanding what is meant by "all", by "knowledge", by "is" and by "false" before we can realize that saying so is itself a claim (to an item of knowledge that is true) and therefore is self-contradictory. Indeed, even the concept of self-contradiction has to be understood. It follows that no act of reasoning, however primary, is ever deductively an island unto itself; there's always some element of induction beneath the surface.

[74]   Granting this reflection, it is easy to see the foolishness of Kant's "analytic/synthetic dichotomy"; and similarly, of the work of logicians who assume there is such a thing as "purely deductive logical systems". Such philosophers and logicians do not stop to ask how they managed to obtain their knowledge apparently out of nowhere. There is a failure of self-criticism on their part; they assume their insights to be irreducible primaries, as if they have been granted an epistemological privilege.

some deduction, and that the moment we begin to analyze and synthesize purely empirical data, we are engaged in deductive acts.

Our interpretations or explanations of given data may variously be referred to as inductive or deductive conclusions, according to where we put the emphasis. If we want to stress the tenuousness of the result, we call it inductive; if we want to underline the rigor of our reasoning, we call it deductive. A merely 'most probable' conclusion is still deductive, in the sense that it is the best possible hypothesis in the context of knowledge available. This means: given the premises available, we can indeed deduce that conclusion; but if we were (or are later) given additional (or modified) premises, another conclusion might be deduced.

9.   ADDENDA (2009-10)

1.   About induction. It should be noted that induction of the content of propositions and **induction of formal relationships** between them (oppositions, eductions, syllogisms, and so forth) are subject to distinct rules.

To induce a proposition of whatever form with specific *contents*, i.e. a 'material' proposition (so-called in contrast to formal propositions, whether it concerns concretes or abstracts of matter, mind or spirit), one must have *some empirical evidence* that the relation concerned occurs in at least some instances. (This is ultimately true, taking knowledge as a whole: although of course some of our particular propositions are obtained from other propositions by deduction, the information that we deduced them from must eventually be grounded in experience.) Thus, for example, a proposition like 'some swans are white' requires that we actually observe some 'white swans'. We would not ordinarily (i.e. usually, ignoring deductive intermediaries) accept the proposition

that 'some swans are green [like parrots]' without having witnessed the fact. From such empirical particulars all our general knowledge is eventually derived, whether by generalization and particularization or by adductive reasoning (or by deduction from general propositions so derived).

This methodology does not apply to *formal principles*. The starting point of formal logic is the assumption that the relationship between any two forms of proposition is simple compatibility – *until and unless* they and/or their negations are shown to be incompatible in some way. Contrary to the claim of some modern logicians, we cannot "*prove* compatibility". We can show examples - but the compatibility in the examples is in fact simply assumed because no *in*compatibility is found/proved (if only by logical insight). We must be careful in this context not to place the cart before the horse. Our attitude of demanding proof is correct, and our method of adducing example(s) is correct – *for content*. But for *form* – i.e. in formal logic – the procedure is the reverse: we must prove the implications rather than the non-implications.

For example, in the case of the doctrine of oppositions, the way we proceed is as follows: there exists (according to the laws of thought) only seven possible oppositions: contradictory, contrary, subcontrary, implicant, subalternating, subalternated, unconnected, it follows that when we cannot prove anything regarding the

opposition between two propositional forms P and Q, we must assume them to be unconnected. Simply because: *there is nothing else for them to be!*[75] We always proceed *by elimination of unproven alternatives*. We demand proof for the hard relations, not for the soft. The latter follow automatically, by virtue of our not having proven the former. That is the way logicians always proceed. To search for compatibilities is redundant, because there is no way to do it without circularity or infinity. Imagine all the propositional forms in the world now or ever: we do not have to show them all compatible before we use them. They are considered compatible until and unless we manage to show them otherwise.

2.   Amplifying the conclusion to chapter 2. Kant defined an **analytic proposition** as one whose predicate is "contained" (i.e. immediately given and manifest) in the subject. This meant that the subject-concept was to us unthinkable without the predicate-concept, so that we

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[75]   Likewise, if we cannot prove both that P and not-Q cannot both be true and cannot both be false, then P and Q cannot be assumed to be implicants. If we cannot prove that P and not-Q cannot both be true, then P cannot be assumed to subalternate Q. If we cannot prove that P and not-Q cannot both be false, then P cannot be assumed to be subalternated by Q. If we cannot prove both that P and Q cannot both be true and cannot both be false, then they cannot be assumed contradictory. If we cannot prove that P and Q cannot both be true, then they cannot be assumed contrary. If we cannot prove that P and Q cannot both be false, then they cannot be assumed subcontrary. If none of these underlying relations can be proved, the two propositions must be taken as unconnected.

could readily mentally extract the latter from the former both a priori (i.e. without recourse to experience) and necessarily (i.e. with utter certainty). My contention is that there is no such mental process as Kant's analytic. Kant and indeed many people do believe that they can extract certain predicates from certain subjects without recourse to experience and with utter certainty; but this is an error on their part due to insufficient introspection and reflection. Such extraction does occur - but it is not a priori or logically necessary deduction: it depends on experience and it can result from erroneous processing of information. It does not tell us how the predicate concerned originally *came to be known*, but is just an ex post facto recall of an already formed opinion or decision. Thus, the very concept of analysis as proposed by Kant is wrong - and *all* propositions must be regarded as essentially synthetic in his sense of the term. Even the four laws of thought and the formal logic derived from them are synthetic, note well.

Underlying the wrong belief in Kantian analytic propositions is the Kantian belief in **a priori** knowledge. My contention, here again, is that no human knowledge is purely a priori - all human knowledge is to various degrees a posteriori. As I have argued, even Aristotle's three laws of thought and the principle of induction depend on some experience to at all come to mind and be understood and believed. They cannot exist in a vaccum, as a thought thoroughly devoid of all content. They are the closest we can get to a priori thought - but they

cannot conceivably be 100% a priori. Thus, the Kantian idea of a priori is a mere figment of his imagination, too. We can use the term to refer to involvement of rational acts (in contrast to pure experience) in the formation of judgments - but we may not conclude from such use that there are judgments that are entirely rational (i.e. devoid of any experiential content whatsoever).

It follows from these considerations that Kant's search for "synthetic a priori" propositions is a red herring. All propositions are synthetic - even those that seemed to him to be analytic. And no propositions are purely a priori - they are all to some extent a posteriori, i.e. dependent on experience at some stage. In other words, all propositions are synthetic a posteriori (whether they be logically necessary or logically contingent).

3.   With regard to the chapters about the categories, about ratiocination and about numbers, a little more need be said in relation to **the more abstract quantitative concepts used in logic**, namely: all, none, some, some not, and the like. How can these concepts be defined in ways that avoid circularity?

I think that we must regard "all" (or "every") as a very early ratiocination, a sense of full inclusion of the set of units under consideration. Inclusion suggests belonging (being "in" a group) and conjunction ("and") with others; the group is "full", when no further units are admitted into it. At first the concept "all" refers to finite sets; but

later we must extend it to non-finite or (more precisely put) open-ended sets, i.e. sets some of whose items are not yet identified. Next in the order of things comes the negative equivalent this concept, viz. "none", which means "all not", i.e. "not any", the expression of negation "not" being of course another very primitive notion/concept.

From these two universal concepts we can by conjunction derive the definite particular "some and some not", which may be defined as "neither all nor none". The three concepts "all", "none" and "not all and not none" are seen to be contrary, i.e. mutually exclusive (only one of them can be true) and together exhaustive (not more than two of them can be false). Now we are able to define the indefinite particular "some" as the common quantity in "all" and in "neither all nor none", and "some not" as the common quantity in "none" and in "neither all nor none". Alternatively, we can say that "some" means "not none", i.e. (more positively put) one or more up to all, and "some not" means "not all", i.e. (again more positively put) less than all or even none.

Other abstract concepts of quantity, namely many, few, more, less, most, least, can be similarly clarified in non-circular ways, by comparing sizes or proportions of subsets. So much for quantity.

With regard to modality, we do not have to proceed in the same way, since the categories of modality are defined with reference to the already developed

categories of quantity. That is to say, whereas for quantity it seems best to start with "all" to avoid circularity, for modality we need not start with necessity (meaning: under all conditions) but may equally well start with possibility (meaning: under some conditions), or however we choose, without risking any circularity.

4. I have mentioned Euclidean and non-Euclidean geometries in chapter 4. With regard to **the axioms of geometry**, I would like to add the following. These axioms are induced – that is to say, they *seem* true (at a given time in history, to certain persons), and we 'generalize' from such appearance that they indeed *are* true. Such generalization from 'seems to be' to 'is' occurs not only in geometry, but in all fields. It is always performed, like all generalization, with a tacit or explicit proviso. We think: this is so, until and unless a contrary appearance or insight comes to the fore; if one does, then we will as a matter of course review this generalization, and perhaps decide to particularize it.

This should be obvious; but it needs to be reminded, because certain commentators tend to dramatize the movement from Euclidean to non-Euclidean geometry as a sort of antinomy, i.e. as something contrary to reason. No, reason takes it all taken in stride.

10. SUPPLEMENTS

A.   From *Ruminations*, chapter 5.6.

All belief-systems are *not* on a more or less equal footing. Some are elaborate mazes, concealing numerous self-contradictions. Others more sneakily rely on logical sins of omission, by effectively exempting themselves from scrutiny. The peculiarity of epistemological theorizing, which too many philosophers fail to realize, is the requirement of self-examination, both to develop a realistic methodology and *to test one's theories on one's own practice*.

The system proposed by Immanuel Kant (Prussia, 1724-1804) is a case in point. The **"analytic/synthetic" dichotomy**, in spite of the prestige of its inventor and later defenders, is full of logically arbitrary declarations and circular arguments. The dichotomy is nonsensical, i.e. not a viable philosophical construct, because it fails to explain and justify itself, i.e. its own genesis.

Kant's analysis, rather than being *a priori* and necessary (as he claims), is quite *a posteriori* and contingent. Moreover, it proposes a *static* ordering of knowledge,

whereas knowledge can only be understood and validated by consideration of its *dynamic* aspects, its conceptual genesis and development.

Knowledge is not established by linguistic analyses of axiomatic tautologies, or by syntheses of particular empirical data – but by an active, flexible combination of all one's experience and the full range of logical techniques. It is a holistic, ongoing enterprise, depending on the whole of one's knowledge context and all our rational means.

Language plays an important technical and creative role in this genesis, by locking our attention onto a clearly pointed-at or a vaguely known and still-unfolding phenomenon or abstraction. Logic is used to rationalize experience, but it is not arbitrary. Experience is a sine qua non of all conceptual work – i.e. all propositions, even 'logical' ones are to some degree 'synthetic'.

What is missing in the 'knowledge is either analytic or synthetic' proposal is the full realization of the *inductive* nature of knowledge. Many philosophers seem to understand the term 'logic' only in its sense of 'deduction', but the truth is that deduction is only one tool within logic as a whole, which is essentially 'induction'! Induction too has its rules[76].

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[76]   As I believe I convincingly demonstrated in *Future Logic*.

In this perspective, different items may indeed be assigned varying degrees of "immunity from revision[77]", which may change under appropriate conditions. For example, the laws of thought are most immune. The law of conservation of matter and energy is more immune than the finding that water boils at 100 deg. C, say. All depends on the amount of data an assumption is based on and how much a change in such assumption would affect the rest of knowledge.

Although the 'analytic' notion was proposed as an explanation of logical necessity, it of course does not follow that its rejection constitutes rejection of logical necessity (let alone of natural necessity, i.e. that of empirical "laws", which it implies but is not implied by). Necessity is a valid, accessible and unavoidable concept.

Logical certainty is possible not only by logical insight (when the negation of a proposition is contradictory, for instance; or again, when a notion is seen to be based on circular arguments), but also by generalization or adductive argument from natural necessity, itself based

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[77]   I took this term (in 2003) from an essay called *Revisionary Immunity*, by a Dr. Greg Bahnsen (d. 1995), posted   on   the   Internet   at www.cmfnow.com/articles/pa018.htm, in the website of the (Christian) Covenant Media Foundation. This essay is on the whole a brilliant and important piece of work, an excellent example of logical criticism of confused notions – although the author, motivated by an agenda of religious apologetics (Christian), seems ultimately to advocate a rejection (or rather, an excessive relativism) of empiricism and logic.

on previous generalizations or adductive arguments, and ultimately on experiences.

All such knowledge remains in principle revisable, but that does not mean that we indeed always find convincing reason to revise it! The choice of our ultimate principles is thus not purely arbitrary or relative, but depends on sincere and conscientious application of logical methodology, including for a start careful observation.

B.   From *Ruminations*, chapter 6.9.

Beneath all Bolzano's deviant logical terminology, and theoretical misconceptions, one discerns the shadow of Kant. This is part of the ravage caused by the latter's pretentious "**thing-in-itself**", his notion of a "**noumenon**", of something beyond the phenomenal unknow*able* to anyone (but Kant himself, of course) and *yet open* to discussion (somehow, in spite of the inherent contradiction – indeed because of it, because of the perverse twist in it).

In the last analysis, Bolzano is not interested in studying ordinary abstraction from experience, the ways we come to know the unknown; he is instead pursuing a Kant-like "transcendental logic", a means to somehow get to know the unknowable. His sought after object is not real, but "surreal". He wants to do the impossible and inconceivable: to cognize the "in-itself" – i.e. something

untouched by consciousness – ignoring that the moment he did cognize it, it would not longer fit his requirement.

Note that I am not taking the position that nothing is untouched by consciousness. I believe some things exist beyond consciousness (at least, human consciousness), based on the observation that my own knowledge is variable and different from that of others. I am merely pointing out that there is no need to look for some pristine object unspoiled by cognition; *everything* is pure and virginal until cognized by someone, and consciousness does *not* necessarily pollute its object.

C.   From *Ruminations*, chapter 8.8.

Various comments **against Kant's view of freedom of the will**.

As I explain elsewhere[78], freedom of the will should not be conceived as "doing what you want", in the sense "doing what you desire", for being moved by random desires is not freedom but slavery. It does not follow that, as Immanuel Kant suggests, freewill is "doing what your reason tells you to do".

The colloquial definition of freedom, "doing what you want", should be clarified to mean that our actions express *our personal will*. It is the "you" rather than the "want" which is at the center of that popular definition.

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[78]   Again, see *Volition and Allied Causal Concepts*, chapter 5-7.

"Want" is here not intended to refer to values, wishes or purposes (be they rational or irrational) that may have preceded the "doing", but is merely a *post factum* inference from such doing; i.e. it is an interpretation of the will that did occur after it occurred. The doer or author is thereby held responsible for such "want".

Freedom of the will refers to our willing irrespective of influences, such as desires or rational judgments or whatever. The point in characterizing will as free is to stress *it is the agent* that wills, and the influences are not determining causes. In that case, *whether the agent wills in accord with or against some ethical injunction, he is indeed responsible for his action*.

Kant seems to claim that the will is only free when it is aligned with the dictates of reason, suggesting that the only alternative to that is slavishly following your passions. He argues: if you disobey reason, you are a puppet, therefore, obey it, and be free. *Non sequitur*!

Logically, if Kant's thesis on volition is true, people have no freedom or responsibility either way, and can neither be blamed nor praised for whatever happens to them. In this perspective, if reason is heard and obeyed, its ethical injunction (or whoever suggested it) becomes *the causative* of virtuous action, and the subject does not merit praise – just as, if reason is ignored or disobeyed, the subject's desires and impulses take control, and he is devoid of blame. Thus, Kant did not think his proposal through sufficiently.

Clearly, we must say that the choice to submit to reason implies an *anterior* act of freewill, which has to be spontaneous, otherwise reason would be controlling the agent against his will. Some people are unmoved by rational arguments, even if reason does influence many of us. Thus, the will is fundamentally as independent of reason as it is of passions. The agent has a choice between the two. If he fails to follow reason, he is drawn by passions; if he follows passions, he ignores reason. But ultimately the choice is spontaneous: that is freedom of the will.

It is interesting to note that some post-Kantian philosophers have come to the contrary conclusion that we are 'free' only when we act *against* reason. This very postmodern posture is in a way a predictable outcome of Kant's rationalist-moralist stance. If one realizes that rigid adherence to principles like that proposed by Kant is just another form of slavery, the only space left for freewill seems to be moral anarchy.

But this "anything goes" position is just the hedonist side of the same coin; it is not a logical answer to Kant. It merely reverts to the idea that freedom is "doing whatever you wish". Kant's objection to that remains valid[79] – even if his proposed alternative, "doing what reason orders", is also objectionable.

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[79] Kant here is of course reaffirming an ancient wisdom, found in the major religious traditions. When 20th Century Western man rejected Judeo-Christian religion in favor of the 'pleasure principle', Kant's wise insight came to seem like old-

The dilemma can only be overcome through deeper understanding of the relation between agent and volition, and influences like desires or rational-moral insights.

It is important to distinguish one's self (or soul or spirit) from one's body and mind. The latter include all one's involuntary thoughts and emotions, i.e. all one's felt affections and appetites. It is a cognitive error to identify with any such *passive* body and mind event, i.e. to think: "this is me or an expression of me". The self may be dissociated from such events; they are essentially 'outside' it. (The self is "empty" of such relatively material and mental events, to use a Buddhist phrase.)

However, this does not mean that we may dissociate ourselves from our voluntary physical or mental *actions*. The latter must be viewed as extensions and expressions of the self that wills them; the self is responsible for them, however much influenced by passive body-mind factors. We cannot, in an attempt to act viciously without taking on blame, argue: "since this body-mind is not wholly me or mine, all its actions are not me or mine".

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fashioned, rigid 'moralism'. But now, perhaps thanks in part to the spread of Buddhist ideas in the West, many people are beginning to realize again that the unbridled pursuit of pleasure is ugly, weak, and destructive of self and others. The characterization of hedonism as slavery is increasingly perceived as accurate, once one reflects on the many ways commercial and political interests use this cunning means to exploit and control the populace. The "hippy" revolution of the late 1960's was not the liberation it claimed to be, but a thorough enslavement to drugs, sexual promiscuity (ending in depravity), and rock and roll music (i.e. omnipresent loud noise).

This too – i.e. the failure to identify with active body and mind events – is an error of judgment.

The role of reason here is thus clear: it serves primarily to honestly distinguish the active from the passive, i.e. the areas of responsibility from those of non-responsibility in the life of the self. Such lucidity does not guarantee morality, though it is a precondition of it (and therefore in itself a moral act). Reason here acts as a counterweight to the influence of emotion. The self must still thereafter intuit the 'moral' choice and exercise freewill in that direction.

An act of will may be considered as most 'free' and 'responsible' when its Agent is maximally aware of all the positive and negative influences impinging on him, *and* of his having freedom of action and responsibility for his actions all the same.

By definition, influences are conditions of which one is more or less aware, and which thereby play a role in the volition concerned. Here, we note that the degree of such awareness affects the degree of freewill. A fully awake person has more freedom and responsibility than someone who functions half-asleep.

Note well the radical difference between freedom through awareness and freedom from awareness. People who affirm the existence and freedom of the will do so with the good intention to take control of their lives. Whereas, people who deny or doubt it generally do so in order to excuse themselves for past shameful or evil acts, or in order to facilitate such acts in the present and

future. They reject freewill so as to liberate themselves from their conscience, by putting it to sleep. They cunningly use such philosophical denial as a bad influence on their will, making possible unbridled pursuit of unethical values.

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(The above list is not meant as a bibliography, but simply details the books referred to within the text.)

Works by Avi Sion

Avi Sion is the author of several works on logic and philosophy: Future Logic (1990); Judaic Logic (1995); Buddhist Illogic (2002) ; Phenomenology (2003); The Logic of Causation (1999, 2003, 2010); Volition and Allied Causal Concepts (2004); Ruminations (2005); Meditations (2006); Logical and Spiritual Reflections (2008-9); A Fortiori Logic (2013). These works can be freely studied at: www.TheLogician.net.